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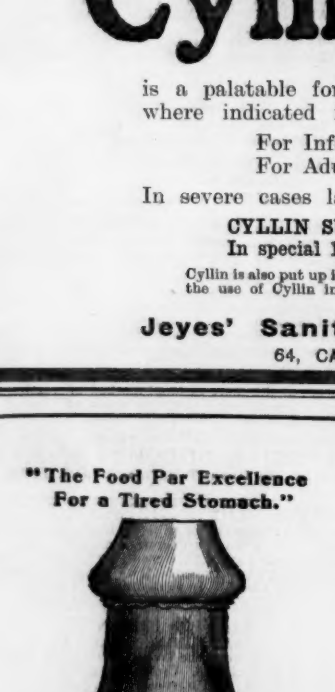

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Delivered before the West London Medico-Chirurgical Society on June 26th, 1908,

BY SIR WILLIAM WHITLA, M.A., M.D. R.U.I., LL.D. GLASG.,

SENIOR PHYSICIAN TO THE ROYAL VICTORIA HOSPITAL, AND PROFESSOR OF MATERIA MEDICA, QUEEN'S COLLEGE, BELFAST.

MR. PRESIDENT AND GENTLEMEN,—My first duty is to thank you for the honour conveyed in your invitation to deliver the Cavendish lecture for 1908. The subject of the etiology of a disease which is the cause of at least one seventh part of the death-rate of mankind is a large one, and can only be dealt with satisfactorily at much greater length than is possible in a single lecture. Indeed, if the society decided that each of its annual lecturers should devote himself exclusively to a discussion of the causation of phthisis the end of the next decade would find many important aspects of this the most important subject of the medicine of to-day still not touched upon. I have therefore decided to confine myself to a consideration of a few etiological points which appear at the present stage of our advance in the knowledge of the tuberculous process to overshadow all others by their bearing upon the prevention of the disease.

The discovery of the tubercle bacillus in 1882 by the brilliant researches of Koch, including his cultural and inoculation tests, finally settled the long-disputed nature of the tuberculosis of man, which was thus demonstrated to be the direct result of an invasion of the human organism by the bacillus. At this stage of the study of the tuberculosis problem it is worth remembering that the discoverer of the tubercle bacillus apparently had all but satisfied himself of the identity of human and bovine tuberculosis, but he expressed himself with some reserve and left the question undecided. It will be within the memory of my auditors that at the London Congress in 1901, Koch caused a profound sensation by his emphatic repudiation of the identity of these conditions. He affirmed that the bacillus of human tuberculosis was incapable of producing tuberculosis in bovines, and those who, like myself, heard him upon that memorable occasion can never forget the visible effect upon his vast audience when he made the further and more momentous announcement that the bacillus of bovine tubercle was to be considered as practically incapable of transmission to man, and that consequently the danger of contracting phthisis from the milk or meat of tuberculous bovines need no longer be guarded against. Not only were these statements felt to be at variance with the experimental results obtained as far back as 1846 by Klenke, in 1869 by Villemin, and in 1870 by Klebs, and at a later period by many other workers, but they were obviously at variance with the accumulated experience of clinical observers. The outcome of this pronouncement made by the universally recognised highest authority on the tuberculosis question was a re-investigation of the relationships between the human and bovine bacillus, which marked an epoch of intense activity in experimental and bacteriological research throughout the civilised world. A mere enumeration of the names of the host of workers who immediately set themselves to prove or disprove the great German professor's statements would alone occupy a considerable proportion of the time at our disposal and I must content myself with the briefest summary of their results.

The importance of a clear understanding of this portion of the tuberculosis problem cannot easily be exaggerated, since it is obvious that as long as doubt or confusion exists regarding the fundamental question of the practical identity or otherwise of bovine and human tuberculosis, the efforts of physicians and sanitary authorities must remain in the paralysed condition which supervened immediately upon the pronouncement of Koch's opinion in 1901. Thanks, however, to the influence of the great Berlin professor's authority the problem has been so thoroughly attacked from so many standpoints that it is now safe to affirm that the main issue has been made clear, though many minor details must be acknowledged still to await their complete elucidation.

Practically all observers agree that amongst the mammalia there are to be found two types of the tubercle bacillus—the human or so-called sputum bacillus, and the bovine. The organism which causes the tuberculosis of birds and the pseudo-tubercle bacilli may, for our present purpose, be left out of consideration. In 1898 Theobald Smith had, as the result of most carefully conducted studies, pointed out several decided differences between the human and bovine types of the bacillus, though he hesitated to pronounce finally upon their duality. These differences have been in the main corroborated and accepted by recent observers, both by the few who still cling to Koch's view and by those most strongly opposed to his conclusions. These differential features have been ably and clearly elaborated by Weber quite recently under the following heads: (1) morphological; (2) cultural; (3) differences in the chemical changes produced in the nourishing soil by each type of bacillus; and, of obviously more practical importance, (4) differences in the pathogenetical activities of the bacilli.

As regards the morphological differences, it may be said that the bovine type of organism is shorter, thicker, and more frequently irregular in its outline, and takes the usual staining in a less uniform manner than the more slender, delicate, and often bent human bacillus. Notwithstanding these differential peculiarities, many observers, amongst whom may be mentioned Hamilton and Young, de Jong, Gratia, and Dorset, affirm that the morphological distinctions can be made to disappear under certain variations in the environment of each type, and many bacteriologists find the so-called morphological distinctions so variable that they refuse to accept them as evidence of any important difference in type.

The cultural differences are highly interesting, the bovine type being less influenced by the soil upon which it grows. Whilst Ravenel agrees with Smith that the differences are most marked when both organisms are grown upon blood serum, Dorset finds the distinctions more evident upon a soil of egg albumin, and his conclusions are endorsed by Wolbach and Ernst. Other investigators insist upon the distinctions caused by cultivation on glycerine broth, potato, agar, and variously modified media. An impartial survey of these cultural experimental researches carries to most minds the conviction that the differential peculiarities cannot be accepted as fundamental; even Dorset affirms that a continued breeding can wipe them out. Of more importance, perhaps, is the interesting research of Smith regarding the so-called acid curve. He found it possible to differentiate between human and bovine bacilli by growing the suspected organism upon a slightly acidulated glycerine broth. If the bacilli are of human type the acidity never entirely disappears; though it fluctuates, alkalinity is never reached. The bovine organism, when grown under identical conditions, causes a diminution in the amount of acidity till by degrees the neutral point is reached or crossed. Even Weber, however, who attaches great importance to these cultural differences between the two types, is compelled to admit that the differential acidity curve cannot be expected to apply to old cultures.

A consideration of the pathogenetical differences is, however, of much greater moment, and this is the aspect of the tuberculosis question which appeals most forcibly to the physician and to the sanitary reformer. It is here that the views of Koch and his co-worker Schutz clash with those of most other authorities. To obtain anything like a clear conception of the value and importance of the most recent experimental results a wide survey is necessary. Amongst the host of experimentalists who have selected the rabbit as the test animal there is practical unanimity that the human bacillus is much less virulent for this rodent than is the bovine organism. To the impartial student the apparently contradictory results obtained by Baumgarten, Smith, Krompecher and Zimmermann, Beck, Dorset, Kossel, Weber and Heuss, Heyman, and many others, when carefully examined, conclusively prove that the different results obtained by the introduction of the bovine and human types into the organism of the rabbit are merely differences of degree. With the same dose administered subcutaneously the human bacillus often fails to induce general tuberculosis in the rabbit in contrast to the constant general infection

caused by the bovine type of organism, though localised tuberculous lesions are almost invariably found in different parts of the rodent's viscera, some of which are often seen to be in the stage of resolution. When intravenous injection is resorted to, the human bacillus almost always causes deposits in the kidneys, joints, lungs, and testicles, though death is much longer delayed than when a similar dose of bovine bacilli is injected. That the difference between the two types is not a specific one is demonstrated by an interesting research of Dorset who found that rabbits suffering from rabbit-plague and from coccidiosis were killed as rapidly by human as by bovine bacilli.

As regards the results of experiments upon the guinea-pig there is unanimity also; this animal is markedly susceptible to both the human and bovine type of tubercle. In the many thousands of feeding, inoculation, and intravenous injection experiments most observers have been able to detect even in this highly susceptible rodent a slightly lessened potentiality of the human bacillus, though this result is as a rule only to be seen when the dose has been very small. Swine are unquestionably susceptible to the human type, though most observers agree that the bovine bacillus acts more rapidly and extensively. Goats, upon the other hand, are very much less susceptible to human tubercle than to the bovine, and in the recent experiments of Calmette and Guérin the injection of human bacilli into the milk ducts in the teats produced much less virulent results, the local lesions tending to heal spontaneously, though the animals reacted to tuberculin three months after and their milk continued to show bacilli. In view, however, of the oft-repeated statement that goats are absolutely immune to the human bacillus the important results of these investigators should be emphasised. Kids fed by the milk of mothers whose teats had been injected by human tubercle died in three and a half months and the autopsy revealed marked enlargement of the mesenteric glands, though the lungs and the other viscera were found to be free. It thus does not appear that even in the almost insusceptible goat there is established any fundamental difference between the action of the human and bovine types of bacillus. There is no evidence yet forthcoming to lead one to conclude that the animals of this species would not succumb to large doses of the human bacillus since marked mesenteric gland disease of a tuberculous nature has followed the administration of small doses.

Of vastly greater importance is the subject of the difference of the human and bovine types when introduced into the ox. Here again the solution of the problem is facilitated by a recognition of the points about which there is more or less complete unanimity before considering the debateable aspects of the subject. It must be at once conceded that the bovine type of bacillus exhibits a much higher infective potentiality than the human organism for bovines, and, indeed, generally speaking, for all mammals, the case of man being omitted from immediate consideration.

To anyone who attempts to survey the extensive literature of this portion of the tuberculosis problem accumulated during the past six or seven years, the contradictory nature of the experimental results at first sight appears to be really astounding. Nevertheless, amidst the chaos of conflicting opinions light can be discerned as clearly breaking, and I believe we are safe in concluding that the main issue has been demonstrated even by the results of those experimentalists who still cling to the belief in there being a specific difference between human and bovine tuberculosis. As already stated, Koch and Schutz maintain as the result of extensive experiments that human tuberculosis cannot be transmitted to bovines. Their conclusion has been arrived at after inhalation, inoculation, feeding, intravenous, and other forms of experimental research. Of far more importance is the converse of this view, also maintained by them, that bovine tuberculosis is to be regarded as practically non-transmissible to humans. The actual experimental demonstration of the truth or fallacy of this latter view is obviously outside the scope of direct experimentation, but I am not without the hope of being able to convince my hearers that its fallacy has been already amply proven by the very researches which are supposed to demonstrate the impossibility of producing bovine tuberculosis by the human bacillus.

The problem of the transmission of human tuberculosis to bovines would appear to be one easy of demonstration if, as pointed out by Weber, such questions as culture, dosage, point of entrance, and especially if the basis of what is to be regarded as evidence constituting a real infection were mutually agreed upon beforehand. It is in this latter consideration that the divergence in the results has been widest. Koch, Weber, and others refuse to accept the local tuberculous changes—purulent, cheesy, and calcareous—which are almost constantly observed in the proximal glands of bovines subcutaneously injected or inoculated with human bacilli, as evidence of a genuine tuberculous infection, even when the caseous deposits have accumulated to the dimensions of a walnut in the shoulder-gland of a calf inoculated under the skin of the neck.

In passing, it will be observed how widely strained is this view from that which clinicians and pathologists hold regarding the interpretations of other almost identical infective processes. Thus, as pointed out by Cornet, the anthrax bacillus in animals produces a general infection, whilst in man ordinarily a localised malignant pustule only results, and yet there is not the slightest doubt as to the real identity of the two processes. The same observer reasoning about the more striking differences which are seen in syphilitic dermatoses, gummata, exostoses, and buboes, points out that these do not militate against the conception of a single and uniform cause for all of them.

It must be conceded that it is easy to produce a fatal general tuberculosis in a series of tuberculin-tested calves by injecting an accurately determined dose (say 0·05 gramme) of bovine bacilli, whilst the same dose of human bacilli obtained from cultures prepared from human sputum will either produce no results at all or only cause local lesions liable to resolve themselves after a time. Those who adhere to such doses in their experiments with human bacilli can easily persuade themselves of the truth of a fundamental difference amounting to a specific distinction between human and bovine tuberculosis.

Of really vital importance are such results obtained by the exhaustive experiments of Kossel, Weber, and Heuss, who inoculated calves with the bacilli obtained from different sources, both bovine and human, for the Commission of the German Imperial Health Council. These researches are held as establishing a fundamental distinction between the human and bovine types of bacillus. Let me ask you to accept them unreservedly for the moment as absolutely conclusive proof of a true specific difference between human and bovine tuberculosis, and we shall see to what a desired haven this acceptance will lead us in our voyage for the discovery of the source of human phthisis. As a preliminary I shall ask your attention to a most vital point about which we have already seen that there is practical unanimity. We have found that all observers agree that from the tuberculous lesions of the mammalia two types of bacilli can be isolated differing in morphological and cultural peculiarities in their power of acid formation and in their pathogenetical qualities, but I have intentionally avoided mentioning the fact that whilst the human type is not found in bovines there is practically the same unanimity that the so-called bovine type is often found in human tuberculosis. The importance of this latter fact cannot be exaggerated owing to its bearing upon the etiology of human tuberculosis. Authorities vary only in their views about the frequency with which the bovine type is met with in man; the English Commission found the bovine bacillus in 23 per cent. of the cultures made from human tuberculosis, and the German Commission in only 10 per cent. It is found that the great majority of cases showing the bovine type of human tubercle are examples of intestinal or mesenteric gland disease—a fact the significance of which will appear later on in my remarks, and it is also noteworthy that in nearly every case the subjects are children. To return to the consideration of the experiments made by Kossel, Weber, and Heuss, 24 young oxen were inoculated subcutaneously with 0·05 gramme of bacilli of the true bovine type cultivated from tuberculous lesions occurring in many cows and pigs; 23 out of the 24 sickened with disseminated tuberculosis. The culture which failed in one particular calf was afterwards proven to be highly pathogenic for other young bovines, so that we may accept the result as successful in every case. These experimentalists next cultivated 45 specimens of bacilli from human tuberculous lesions; of these 38 proved to be of the human type of bacillus, and no less than seven were found to be of the true bovine type. Not a

single specimen of the 38 was found to produce disseminated tuberculosis when inoculated subcutaneously into young bovines in doses of 0·05 gramme, though always local implication of the shoulder lymphatic gland followed, without any deleterious influence, as a rule, upon the animal's health. Of nine young oxen inoculated with a similar dose of the so-called bovine type obtained from human tuberculous lesions, all sickened with general tuberculosis. That there may be no misconception I shall quote the conclusions of Weber, who is a firm believer in the constant differences to be found between the human and bovine types of bacillus, though he nowhere, as far as I can see, goes quite so far as to state his conviction that these differences are to be considered as equivalent to those which should constitute a distinction of species. He writes: "That the tuberculosis of the human depending upon the bacilli of the bovine type is transmittible to oxen, that depending upon the bacilli of the human type is not, for whilst the bacilli of the bovine type produce tuberculosis in the ox, the bacilli of the human type produce neither by inoculation, feeding, nor inhalation a progressive tuberculosis in this animal." "It must be emphasised," he says, "that between the bacilli of the bovine type coming from the ox and the pig and the bacilli of bovine type bred from human tuberculosis there exists no difference as regards their virulence for oxen."

This brings one to the point which it is most important should be thrust home at this stage of our survey of the tuberculosis problem. If we accept the view of Koch that there is a vital or specific difference between the bacilli of human and bovine tuberculosis the question has got to be answered, "Whence come the bacilli of bovine type which so constantly are to be found in a considerable percentage of cases of human tuberculosis?" The answer can only be found in the obvious transmissibility of the tuberculosis of bovines to man or else in an assumption which practically amounts to the same thing—viz., that the ox and the human derive their infection from a common source. It would thus appear that the more important of Koch's two statements is amply disproven by the results obtained by his own followers who have laboured to demonstrate that human tuberculosis cannot be transmitted to the ox. It must, however, be remembered that the latter contention cannot be accepted as proven. A large number of recent workers have obtained results at direct variance with those which for argument's sake we have just accepted. They have been able to produce a genuine disseminated tuberculosis in young bovines by the introduction in various ways of larger doses of the bacilli of the true human type, in many instances bred from phthisical sputum. Amongst these must be especially mentioned the absolutely convincing experiments of Hamilton and Young conducted by means of inoculation and by inhalation. The intravenous method of experiment has been successful in the hands of Arloing and Papier, Prettner, Karlinski, de Jong, and many others.

A survey of the general results carries the conviction that in most, if not in all, cases the success or failure of the experiment is simply a question of dosage, though the followers of Koch claim that large doses constitute a violent breach of the natural powers of resistance possessed by the animal. Upon reflection it will be evident that this is but giving the question away by stating in another manner that the tissues of the ox show a greater resistance to human than to bovine tubercle, a fact conceded by all authorities—the resistance breaks down in the presence of a large dose.

Many experimentalists have demonstrated to their entire satisfaction the practical identity of human and bovine bacilli by the virulence which they have been able to produce in the human type of bacillus by causing it to pass through the organism of the guinea-pig; Ravenel was able greatly to increase the virulence of the human type of the bacillus by passing it successively through young bovines—a fact also demonstrated by Hamilton and others. The truth of the summary of Professor James in Cornet's classical work on tuberculosis, translated in 1904, remains not only unshaken but strengthened in every way by the more recent researches. After a review of the evidence he states that "the bacilli of human and bovine tuberculosis are the same organism, but modified in their activity by change of host."

It must also be mentioned that as regards Koch's view that man's susceptibility to bovine tuberculosis is of such very rare occurrence that he estimates it as hardly greater than that of hereditary transmission, if he says such a susceptibility really exists (and therefore he does not deem it advisable to take any measures against infection by the milk and flesh of tuberculous animals) it strikes one as remarkable that man should be the only other mammal exhibiting this insusceptibility. The experiments of de Schweinitz and Schroeder, and those of McFadyean, have proved that monkeys are at least as susceptible to bovine as to human tuberculosis—a fact which goes a long way in disposing of such a contention.

Having accepted, then, the conclusions of the great majority of all recent workers in their agreement about the practical identity of human and bovine tuberculosis, or even if we accept the conclusions of those few who only go so far as to state their belief that both diseases are interchangeable, we have arrived at the stage when the field is clear for the study of the etiology of human tuberculosis, especially of its most frequent variety, phthisis.

Ravenel, in his recent address delivered before the International Congress of Hygiene at Berlin, gives a summary of the different routes by which the tubercle bacillus has been detected in its entry into the human body, and he accepts as conclusive the evidence that the tonsils are frequently the portal, the food being the bearer of the germs in a large proportion of such cases. In passing it will be observed that this view implies the conviction that the infection is of bovine origin. He quotes Grober's remarkable experiments demonstrating a direct route to the pleura and lungs viâ the cervical lymphatic glands, which induced that observer to regard the tonsillar infection as the explanation of the frequency with which the apex of the lung is the seat of pulmonary tuberculosis. In this connexion the relationship between adenoid growths and tuberculosis is highly interesting and the frequency with which phthisis has been found associated with extensive dental caries. Cornet's exhaustive series of cases, where the skin, the mucous membrane of the nose, mouth, pharynx, œsophagus, eye, genito-urinary tract, and ear were found to be the portals of entry of the bacillus, are highly interesting.

In a study of the etiology of phthisis, however, the really practical question narrows itself into the consideration of the two obviously probable routes of infection—viz., *the respiratory tract* and *the intestinal surface*. The object of the present lecture is to place before the members of the society the bearing of the most recent experimental researches upon this most important and highly interesting portion of the tuberculosis problem. The stomach may be omitted for the moment from consideration, as most authorities agree with the view of Ravenel that there is no evidence that infection takes place from its surface, since though the peptic secretion exerts an inhibitory influence over the development of the bacillus, the latter is certainly able to survive its action for the ordinary period of gastric digestion.

After the discovery of the tubercle bacillus as the causal factor in tuberculosis and the detection constantly of its presence in the sputum of phthisical patients, taken together with the fact recognised from the earliest times that in the vast majority of cases of human tuberculosis the lungs were the seat of the disease, it was universally held that pulmonary tuberculosis or phthisis must therefore be a *primary* disease. This still remains the accepted view; it is clearly enunciated by Cornet in the following statement: "For the vast majority of the cases of phthisis, the lung and its associated bronchial glands are either the sole focus of disease as evidenced by the cicatrices so frequently found at autopsy or are easily recognisable as the primary focus when compared with the more recent and younger manifestations in other organs. Pulmonary tuberculosis is generally, therefore, a primary disease, from which it follows that it arises through infection from without, the only possible carrier of the infection being the air of inspiration." "Nowadays," he says, "the *inhalation* theory has become the common possession of almost all physicians." Koch states his views in almost identical language, viz.: "In by far the majority of cases of tuberculosis the disease has its seat in the lungs and has also begun there; from this fact it is justly concluded that the germs of the disease must have got into the lungs by inhalation. We know with certainty that they get into the air with the sputum of consumptive patients; the sputum of consumptive people, then, is to be regarded as the main source of the infection of tuberculosis." "On this point," he says, "I suppose all are agreed."

Many facts, some of them of rather a startling nature, have been brought to light since the above words were printed a few years ago, and though it is no part of my present purpose to attempt to prove that phthisis may not sometimes be produced in this manner, it shall be my endeavour to show that the results of recent experiments should lead us to conclude that the intestinal route plays a far more important rôle in the production of human pulmonary tuberculosis than has been hitherto recognised. The inhalation theory—the common possession of almost all physicians—is based upon a recognition of the results of pulmonary anthracosis, pathological or experimental, and upon the success of inducing pulmonary tuberculosis in animals by causing them to inhale an atmosphere impregnated with tubercle bacilli. When an animal is made to breathe an atmosphere laden with fine carbon particles the detection of the latter in the lung tissue has been hitherto regarded as positive proof that they reached the pulmonary parenchyma after their arrest in the alveoli, the usually accepted theory being that the carbon dust is conveyed inwards to the pulmonary parenchyma by the process of phagocytosis. The major portion of the foreign material is swept upwards by the action of the cilia, but having once reached the alveoli, in which there is no ciliated epithelium, the finer dust becomes storehoused there, to be, according to Cornet, in course of time slowly and completely transported by way of the lymph channels to the bronchial glands. I shall quote his words so that there may be no misconception, and, moreover, they embody the view which has received universal acceptance. He states "that exactly the same conditions govern the inhalation of tubercle bacilli; here, too, the greater number of the inspired bacilli are deposited in the upper passages and are swept outwards by the current of mucus. The opportunity for permanent localisation is afforded only in places in which the stream is dammed back or delayed. The very same opportunity is afforded, however, in a pronounced degree to those few bacilli which have penetrated to the deeper parts. Here they tend to remain permanently, even under normal conditions, by reason of the very inadequate natural provisions for their removal. Tubercle bacilli behave in exactly the same manner as do the inactive particles of dust, such as fragments of coal or of stone, and this affords a proof of the fact that purely mechanical conditions and not special idiosyncrasies govern the localisation of the infection in the lungs. Occasionally, instead of going on to development within the alveoli, the bacilli find their way through the mucous membrane and are carried by the lymph stream to the bronchial glands." This latter result, he considers, occurs more frequently in children, whilst in adults the bacilli which have gained the alveoli develop *in situ* into tubercles, and he considers the case to be amply proven (1) by the many hundreds of animals (he having himself contributed several hundreds) which regularly fell sick after the inhalation of tuberculous material in moist or dry condition; (2) that this material exists in a shape fit for respiration in the environment of consumptives; and (3) that there is the overwhelming frequency of phthisis among men exposed to just such a manner of infection.

The recent epoch-marking experiments of Calmette and Guérin may be accepted as having shifted the question of the portal of entrance of the tubercle bacillus from the site of the pulmonary alveoli to that of the intestinal epithelium. Before dealing, however, with their highly important results it will be advisable to consider some remarkable facts governing the production of pulmonary anthracosis, demonstrated by P. Vansteenberghe and Grysez, whose experiments were undertaken at the request of Calmette, and the results conclusively prove many serious fallacies in the inhalation theory of the cause of pulmonary tuberculosis.

The reports of the Lille investigators appeared so novel and startling, and the conclusions derived from them seemed to be of such vital importance in the elucidation of the etiology of human phthisis, that Professor W. St. Clair Symmers and I undertook a series of experiments upon guinea-pigs with the view of testing some of their results and studying the conclusions arising from them, especially with reference to Calmette's contention that in the immense majority of cases pulmonary tuberculosis is not contracted by inhalation. The details of our joint experiments, in some of which we introduced modifications of the methods pursued by Vansteenberghe, Grysez, Calmette, and Guérin, would occupy much more than the short time at my disposal. I have therefore considered that an exhibition of the beautiful specimens upon the table, which have been mounted permanently in gelatin by Professor Symmers in the laboratory of Queen's College, Belfast, will give a bird's-eye view of our results much more convincing than any mere enumeration of the steps and details of each individual experiment.

In order roughly to test the power of the pulmonary capillaries as a filtering mechanism for the arrest of fine carbon particles circulating in the blood, a mixture of China ink and water as an initial experiment was injected into the large vein in the ear of an adult rabbit. This animal's lung, obtained by causing its death within an hour after the injection, will be seen in the mounted specimen to be obviously highly charged with carbon particles in marked contrast to the healthy lung mounted alongside it.

The next specimen to which I wish to direct your attention is from an adult guinea-pig, killed after being fed for four days with an emulsion made by rubbing up finely-powdered China ink in olive oil and water. In order that no possible soiling of the air-passages or pharynx could occur, Calmette's method of introducing the emulsion directly into the stomach was pursued. The animal's body, all but the head and neck, being introduced into a narrow, deep, cardboard box, and the jaws gently held apart by two pieces of string passed round the incisor teeth, a small, soft indiarubber catheter was introduced into the stomach, as in the simple operation of washing out this organ in human patients. Through this œsophageal tube the emulsion was slowly injected into the stomach and the catheter cautiously withdrawn after being slightly rotated so that any adherent carbon about its point would be completely wiped off by the œsophageal mucous surface. The specimen shows the lungs to be engorged with carbon in marked contrast to the pale pink-coloured organs removed from another healthy guinea-pig. The large mass of lymphatic tissue constituting the upper mesenteric glands is observed by its ivory-like whiteness to be free from any obvious impregnation by carbon particles. The lower mesenteric glands were also found free.

This experiment, performed in a score of cases, including modifications such as the mixing of the carbon with the animal's ordinary food, always gave the same striking result, and in several experiments the lungs were found blackened by disseminated patches of carbon in the upper and along the margins of the lower lobes within from 8 to 24 hours after a single dose. When the guinea-pig had received no food for 24 hours prior to the injection the lungs were found deeply infiltrated with the carbon particles at many points, even when the animal was killed as early as 4 hours after a single dose, as seen in the accompanying specimens.

In another series of experiments the carbon particles were injected into the peritoneal cavity by a hypodermic syringe and similar results were obtained, the lung of the adult guinea-pig being found to be infiltrated with the foreign particles, whilst the abdominal lymphatic glands were free.

The explanation of these results is obvious: the carbon particles effect an easy entrance through the intestinal epithelial surface; reaching the lacteal or lymphatic paths they pass through the lymphatic glands of the mesentery, and finally, either inclosed in phagocytes or free, find their way into the thoracic duct to be poured into the venous circulation before being arrested in the capillaries of the lung.

Vansteenberghe and his colleague next pointed out very remarkable differences from the above result when young guinea-pigs were substituted in the experiments for adult animals. They found that the carbon particles injected into the stomach through the œsophageal tube, or mixed with the food in the ordinary way, entered the lymph paths as in the case of the adult animals, but were at once filtered out by the mesenteric glands, so that the lungs remained free whilst the glands were deeply infiltrated, the insurmountable barrier caused by the lymphatic glands of the mesentery preventing pulmonary anthracosis. They sum up their conclusions in the statement: "That as the results of these experiments with the adult guinea-pig the pulmonary anthracosis is total and the broncho-tracheal engorgement complete; with the young animals the lungs remain free, proving that it is easy to render an adult guinea-pig perfectly anthracotic without submitting it to repeated inhalations of carbon particles."

The bearing of these remarkable results upon the etiology of human phthisis is obvious, and Professor Symmers and I submitted a number of young guinea-pigs to experiment with the view of testing the conclusions arrived at by the Lille investigators. Our most striking result is seen in the next mounted specimen. We injected into the peritoneal cavity of a young guinea-pig China ink rubbed smooth with sterilised water. Twenty hours after a single injection the necropsy revealed a dense blackening of the abdominal lymphatic glands. The carbon had also reached the thorax through the lymph channels of the diaphragm, which was rendered jet black throughout its substance, and the right costal pleura was deeply stained almost to the thoracic apex, but the lungs appeared to be quite free in the midst of the surrounding blackness.

In ordinary feeding experiments when the carbon was mixed with the food of these young animals we found usually that neither the glands nor the lungs became visibly infiltrated with the carbon particles, the intestinal contents alone being black; apparently there was little or no absorption of carbon through the intestinal epithelium. We were unable to obtain evidence of the presence of carbon particles in any of the viscera or in the brain when the ink was mixed with the food eaten by the animal. The specimens under the microscopes have been kindly sent to me by Vansteenberghe. The first section shows the particles of carbon included in leucocytes in the intestinal villi of a young guinea-pig upon their way to be intercepted by the mesenteric glands. The specimen under the second instrument shows a section of the lymphatic gland from the mesentery of a young guinea-pig. Amongst the cells of the gland particles of China ink may be observed filtered out by the fine reticulum, which acts as a barrier to the admission of the carbon, so that none of the foreign particles reach the thoracic duct or lung tissue. In none of our feeding experiments were we able to produce visible blackness of the mesenteric glands of young guinea-pigs, but in every case the pale pink lungs appeared to be quite free from carbon, in very marked contrast to the almost ebony-like blackness easily induced by so feeding adult animals with China ink.

Vansteenberghe and Grysez next proceeded to submit rabbits and guinea-pigs to an atmosphere laden with fine carbon particles by keeping them in a glass cage in which a lamp fed by turpentine was kept burning. The upper air-passages were found laden with carbon, some of which had also found its way so far as the pulmonary alveoli when the experiment had been of long duration, but in no case was carbon found in the parenchyma of the lung; and in the rabbit, which breathes through the nose, the carbon particles were never found to have reached even as far as the trachea. Believing that the carbon particles sometimes found in the pulmonary parenchyma after long and repeated inhalation of a very densely laden carbon atmosphere had been conveyed by the digestive route through the animal swallowing the carbon dust which had accumulated about the pharynx, the next step in their investigation was to repeat the inhalation experiments in a new series of guinea-pigs and rabbits after the œsophagus had been ligatured. The carbon particles were then arrested above the ligature and could not be taken up by the lymphatic paths of the digestive tube to be carried to the lungs, consequently the animals did not show anthracosis after a long period of inhalation.

Their next series of experiments are of even greater interest and importance. The digestive tract was left patent and a low tracheotomy having been performed, through the opening a plug of cotton-wool was inserted into the bronchus of one lung, completely blocking it. The animal was exposed to a prolonged inhalation of carbon dust with one lung shut out from the air and the other freely exposed to it. The corresponding lobes of each lung after the animal had been killed were carefully examined and contrasted, with the following remarkable result. The free lung showed carbon deposits in the bronchi and in the external portions of the aveoli, and to a certain extent in the parenchyma, whilst the lung isolated from the carboniferous atmosphere manifested intra-parenchymatous deposits, the alveoli and the bronchi being free. These observers were therefore justified in their conclusion that physiological anthracosis is due in most cases to the intestinal absorption of carboniferous particles arrested normally in the nasal and pharyngeal passages and afterwards swallowed with the saliva and nasal mucus, to be ultimately carried to the pulmonary parenchyma by the blood stream. In animals and men the lungs soon rid themselves of such particles when the broncho-tracheal glands are healthy, but where these latter have been previously injured or have suffered from too frequent inhalations, as in the case of miners, definite anthracosis supervenes.

The application of these remarkable experimental results to the elucidation of the etiology of human pulmonary tuberculosis is as obvious as it is rational. It must not be forgotten that Calmette and Guérin, as the result of a totally different research, had previously arrived at the conclusion that air-borne tubercle bacilli were unable to reach the alveoli and to penetrate the pulmonary parenchyma. In this connexion also it must be remembered that von Behring advanced at the Congress of German Naturalists and Medical Men held at Cassel in September, 1903, and a year later at Berlin, the then startling doctrine that phthisis in the adult could not be produced through infection viâ the air passages but was always the result of a long past intestinal absorption of the bacilli occurring in childhood.

The fact which seemed for a long time almost to settle the question against the intestinal origin of pulmonary tuberculosis was the rarity of *primary* intestinal tuberculosis. Koch considers this condition to be extremely rare, having been able to collect altogether only some 28 cases. As pointed out very forcibly by Ravenel, Koch, before accepting a case of tuberculosis as being due to food, demands a chain of evidence which it is practically impossible to establish—viz., clinical and anatomical data of the disease and its point of invasion; the exclusion of all other sources of infection; the coincident infection of others using the same milk; and the demonstration of udder tuberculosis in the cow furnishing the milk. Furthermore, he adds that neither Koch nor anyone else asks for such evidence in determining the source of respiratory tuberculosis, or, in fact, of any other disease.

It is obvious that the main question for the practical physician to be convinced of is, does the tubercle bacillus pass through the intestinal mucosa like the fine particles of China ink without causing any lesion or leaving any local evidence of its point of entrance? It may at once be asserted, without fear of contradiction, that this vitally important fact has been conclusively proven by experiments too numerous to mention. Nicholas and Descos found that tubercle bacilli administered in fatty food to dogs could be found in the chyle within three or four hours; Desoubry and Porcher, Ravenel, Römer and von Behring, Besanti and Panisset, Schlossmann and Engel, and many others have demonstrated the same fact not only in the case of dogs but in the guinea-pig and other animals, the intestinal surface being found in each case to be intact.

It is, however, to the exhaustive researches of Calmette and Guérin and Breton that we must look for the conclusive evidence which renders Koch's position no longer tenable. These observers injected into the stomachs of guinea-pigs through the œsophageal tube a finely divided emulsion of living bacilli ground up in an agate mortar with a decoction of linseed, the constant result being that the tubercle bacilli were absorbed by the intestinal surface, producing extensive tuberculous deposits in the mesenteric glands, lungs, and other viscera. When the animals lived beyond 30 days the lungs were invariably found to be studded with caseous tubercles and the broncho-tracheal glands also always suffered. In guinea-pigs which survived the injections from 50 to 60 days the deep cervical glands were nearly always found to be decidedly tuberculous.

This involvement of the cervical lymphatics is of the utmost importance to physicians, since the usually accepted theory is that these glands when found to be tuberculous in the human subject are regarded as evidence that the bacilli have effected an entrance through the mucous membrane of the mouth, tonsils, or pharynx. In order to prove that their infection did not occur in this manner through faulty technique in the use of the œsophageal sound, Calmette and his co-workers made an investigation of the guinea-pigs killed within ten days after the introduction of the bacilli into the stomach of the animal by the tube, and they found that the entire lymphatic system had already become infected. Healthy guinea-pigs when inoculated with the substance of the inguinal glands died from extensive generalised tuberculosis.

In these feeding experiments the true tuberculous nature of the lesions found in the abdominal glands, lungs, bones, and testicles was demonstrated either by the discovery of the specific bacillus or by further inoculation experiments. As bearing upon the theory of Koch that the intestinal origin of a given case of tuberculosis can only be accepted as proven when an intestinal lesion is found, their conclusion must be emphasised: "The most minute examination of the intestines as well as of the organs connected with the intestinal tube did not permit us to discover the *least trace of disease*." Even when the abdominal glands were greatly enlarged, extensively calcified or completely softened, the intestines, liver, and spleen were always quite free from tuberculous infection.

Professor Symmers and I designed a simple experiment in which we combined the anthracosis experiments of Vansteenberghe and Grysez with those of Calmette and Guérin; the results were very striking. Our series of eight feeding experiments were intended simply to demonstrate the permeability of the intestinal mucosa by the particles of carbon and by the tubercle bacilli at the same time, and also to prove the filter-power of the pulmonary parenchyma. For this purpose we rubbed up large doses of a living culture of bovine bacilli in an agate mortar with powdered China ink, olive oil, and water till the emulsion acquired the consistence of thin cream. This was then carefully introduced by means of a soft rubber catheter into the stomachs of adult guinea-pigs, precautions being employed whereby soiling or infection of the pharynx and upper air-passages was rendered impossible. The animals were killed at periods of from 4 to 24 hours after a single injection, and the lungs and viscera examined for tubercle bacilli. These were found in six cases out of the eight in a smear taken upon a glass slide from the freshly cut surface of a section of different portions of the lung after the slide had been stained by the usual methods. The tubercle bacilli were always sparse, and were found usually free in the specimen of lung juice lying amongst an abundance of free or inclosed carbon particles, some of which were of much larger size, though the majority were even smaller than the tubercle bacilli. The experiment was variously modified and the results varied. The accompanying specimen of the lung of an adult guinea-pig killed four hours after a single injection is seen deeply engorged with the China ink, and the bacilli of tubercle were discovered in different parts of the slide containing the juice which exuded from the freshly-cut surfaces which was also laden with carbon particles. The mesenteric and ileo-colic lymphatic glands contained numerous tubercle bacilli with some carbon obviously on their way to the lungs. In animals killed 22 hours after the injection the bacilli were also to be detected in the spleen, and they were very abundant in the abdominal lymphatic glands, though the great bulk of the dose still lay unabsorbed in the intestines. The mucous membrane of the bowel was throughout its course deeply coated by the China ink, and the contents of both stomach and bowel showed numerous bacilli which had not been absorbed. No lesion or breach of surface was anywhere to be detected, and the gentle introduction of the soft flexible rubber catheter could not be seen to have inflicted any injury upon the stomach membrane. In one experiment the presence of the bacilli in the lung smear suggested the stomach as being the portal of entry since this organ was still full of the injection; 22 hours after the dose had been injected the pylorus was closed and the intestines were quite free of all discolouration by carbon, no portion of the dose apparently having passed downwards from the stomach.

When a colossal dose (5 grains) of the living bacilli was mixed with the ink and oil the bacilli were either very sparse or absent in the lung smear, and the carbon particles showed equal paucity. This result was obviously due to the arrest of the digestive function caused by the large dose of living bacilli, since the stomach was still filled by the injection. When a small dose of the bacilli had been mixed with the carbon the latter, as might be expected, was found in abundance in the lung juice, whilst the bacilli were only to be discovered after a prolonged search.

Of great practical value are the series of experiments upon young goats carried out by Calmette and Guérin, in which tubercle bacilli of bovine origin were introduced into the stomach by the œsophageal tube. As soon as the lymphatic mesenteric glands had become caseated the lungs commenced to show typical tuberculous lesions, the bacilli being no longer shut out from the lymphatic circulation. These results conclusively prove the intestinal origin of pulmonary tuberculosis in these animals as insisted upon by von Behring. When older goats were used in the experiments the bacilli were found rapidly to pass through the mesenteric gland barriers, producing a speedy tuberculosis of the lungs, usually without leaving a trace of the visible lesions met with in the abdominal glands of the kid.

The histological differences between the mesenteric glands of the young and adult animal readily explain these results and those of Vansteenberghe and Grysez. The bacilli passing in the chyle through the looser alveoli of the adult gland are at once taken up by the polynuclear leucocytes which carry them into the thoracic duct to be poured into the right side of the heart, after which they are filtered out by the fine capillary network of the pulmonary capillaries where, *in situ*, the well-recognised tuberculous proliferation occurs which eventuates in the phthisis of human subjects. Calmette and his co-workers have therefore been driven to the conclusion that in the immense majority of cases pulmonary tuberculosis is not contracted by inhalation but by the ingestion of bacilli or bacilliferous products which penetrate (as surmised by von Behring) the intestinal mucosa. These observers, however, reject von Behring's affirmation that adult phthisis is always the result of an intestinal infection contracted in infancy, since their experiments have demonstrated how easily and swiftly intestinal absorption causes pulmonary tuberculosis in adult animals. Thus step by step the statements regarding the specific differences between the human and bovine bacillus and those made about the impossibility of infecting bovines with human tubercle, as well as the erroneous views regarding the part played by inhalation, have been disproved and the way finally opened up for a clear appreciation of the intestinal origin of human phthisis through the demonstration afforded by experimental researches carried out on the lower animals.

Since we cannot employ the human as a subject for the demonstration of the possibility of conveying to him the tuberculosis of animals of the bovine class we are driven to seek for evidence of this transference in a scrutiny of clinical experiences and bedside observations, and it was with the intention of discussing this part of the tuberculosis problem that I was tempted to undertake the delivery of the Cavendish lecture, but I fear that I have already drawn heavily upon your patience and indulgence and reluctantly I must close my remarks with but a brief reference to this the most vitally important portion of the entire subject of tuberculosis.

Let me remind you of the argument used at the beginning of my summary—viz., that if there be any specific differences recognisable between the human and bovine bacillus surely the constant detection of the bovine type of organism in a considerable percentage of the cases of human tuberculosis may be accepted as proof of the communicability of the bovine bacillus to the human subject. This proof appears to be absolute if we pause to consider how perfectly the facts dovetail with the experimental results of the Lille observers regarding the modifications caused at different ages by the development of the differences in the mesenteric glands. If we reflect upon the source of the bovine bacilli which have been in so many cases isolated from the tuberculous lesions of human beings the most striking and suggestive fact is that the great majority of these cases have occurred in children, and secondly, that they have been found generally in examples of abdominal tuberculosis with or without tuberculous ulceration of the child's intestines.

According to the generally accepted inhalation theory these bacilli have not been inhaled as dried sputum dust or breathed in the form of droplets or spray thrown out by bovines in the act of coughing, since had they entered through the child's respiratory tract a primary phthisis would have been the immediate result. Moreover, the opportunities for such direct proximity of children to bovines are rare; hence the obvious conclusion is that the bovine bacilli gained an entrance to the child's stomach through the milk of tuberculous cows.

In my "Practice of Medicine," published a few weeks ago, I have referred to two outbreaks of tuberculosis which occurred under my own notice in an isolated rural community of charity schoolchildren numbering over 150, most of whom

had been residents for several years in the institution. In 1906, within a period of a couple of months, 15 previously healthy girls showed a general enlargement of the lymphatic cervical glands which steadily increased and assumed the typical characters of an indolent tuberculous adenitis, whilst in about a similar number one or more slightly enlarged cervical glands could be detected; there was no reason to attribute the adenitis to any local teeth or throat trouble in these cases. At the same time another child developed a subacute general peritonitis followed by marked ascites and unmistakeable enlargement of some of the mesenteric lymphatic glands. There had been no case of phthisis in the institution for at least a couple of years. Uncooked milk largely entered into the dietary of all the children, the supply coming exclusively from six cows fed upon the farm and housed under ideal conditions as regarded fodder, stable accommodation, and ventilation. Nevertheless, the outbreak pointed so clearly to infection through the milk-supply that the six cows were examined by a competent veterinary surgeon, who submitted them upon three separate occasions to injections of tuberculin: Four of the six animals were found to be decidedly tuberculous, though the udder of only one was affected and one of the remaining healthy animals had been only recently purchased. The milk-supply was at once changed and rigid sterilisation of all milk has been carefully carried out, since which time practically no trace of tuberculosis has been visible amongst the children. All the glandular cases as well as the child suffering from tabes mesenterica finally recovered under an open-air treatment rigidly carried out day and night for several months.

About four years before this outbreak a considerable number of cases of cervical adenitis had been noticed, some of which required extirpation, and a few cases of joint tuberculosis, including one of the hip, one of the knee, and one of the ankle, with a case of phthisis occurred. This outbreak coincided with the illness and slaughter of two cows deeply infected by tubercle; one of these animals was a splendid specimen of milch cow which had taken two high-class challenge cups for the quality and quantity of her milk whilst supplying the institution. Owing to the fat and healthy appearance of these animals no suspicions of their illness were aroused till coughing set in, when the udder of one of them was found to be infected. I regret to state that the type of bacillus was not investigated and though the chain of evidence may exhibit other weak links I have myself no doubts of the bovine origin of these cases of human tuberculosis.

In looking back over a period of about 30 years in connexion with this charity school I can now satisfy myself that several similar outbreaks of cervical adenitis and other forms of tuberculosis, including phthisis, were due to an infected milk-supply. Notably one instance was impressed upon my memory where two children succumbed from acute general tuberculosis at a time when the number of inmates was small and the total milk-supply was furnished by two cows, one of which had to be destroyed owing to an advanced tuberculosis. It is only since the results of Calmette's recent researches that the connexion of cervical tuberculous adenitis with the intestinal origin of tuberculous infection has been adequately recognised, and there can be little doubt that soon many such cases as those mentioned will be thoroughly investigated and proven to be due to an infected milk-supply.

In this connexion an important case where an exhaustive examination of the surrounding circumstances was carried out by Dr. J. P. Watt, medical officer of health of the county of Aberdeen, is reported in THE LANCET of May 9th (p. 1357). Two children having died from tuberculous meningitis the milk-supply upon investigation was traced to a cow whose udder showed tuberculous nodules; bacilli were found in the milk, and the subsequent post-mortem examination revealed extensive tuberculous deposits in the animal's pleura, peritoneum, and glands. A necropsy on the second child showed tuberculous meningitis and a caseous gland in the mesentery. Dr. J. Adams obtained pure cultures of the tubercle bacillus from this child's cerebro-spinal fluid and likewise from the milk and glands of the cow, and from an exhaustive investigation of these bacilli they were demonstrated to be of the bovine type, agreeing in their cultural, morphological, and pathogenetical features. This contribution is one of the most interesting and valuable clinical proofs of the communicability of bovine tuberculosis to the human, and it is highly important as harmonising with the recent experimental results of Calmette, Guérin, Breton, Vansteenberghe, and Grysez, already detailed, since the mesenteric gland involvement may be accepted as additional proof of the intestinal origin of the infection.

From clinical observation, as well as from experimental results, one is led to the conviction that *dosage* is everything in the consideration of phthisis. Probably a very small proportion of those infected by the bacillus of tubercle develop the clinical symptoms of the disease, and it is here that the natural resistance as manifested in the form of heredity comes into consideration; when the dose is large probably no human can escape.

Notwithstanding the protestations of Cornet, we must regard the bacillus of tubercle as ubiquitous when we consider the enormous number of cattle which are tuberculous and the large number of humans who suffer from pulmonary tuberculosis with cavities. The number of tubercle bacilli discharged daily in the sputum of a patient in advanced phthisis has been said to be as great as the number of human beings on the earth. The modest estimate mentioned by Cornet may be taken as nearer the truth—viz., that 7,200,000,000 may be daily thrown off in the sputum from a single individual. If we imagine each organism placed end to end in single file this number would constitute a chain no less than 12 miles in length, a chain which would reach from where I stand to beyond Epsom town, but who can conceive of the myriads of bacilli produced daily in bovines and passing out in their milk. Even when we concede that a large proportion of these bacilli are dead, the numbers are so colossal as to defy realisation and we must be driven to the conclusion that the bacillus of tubercle is ubiquitous. Every individual draws it into his upper air passages in the form of dust, swallows it in milk, and probably ingests it in infinitesimal amounts in almost every form of food which has been long exposed to the ordinary city atmosphere. Were there not some powerful phagocytic or other mechanism for dealing with these minute doses of the tubercle bacillus within the human healthy body there probably would be few, if any, of us left to study or discuss the tuberculosis problem.

If we assume this constant exposure to small doses much that is difficult and dark in the daily experience of every physician and surgeon becomes clear. As soon as any portion of the human organism has its natural vital resistance lowered by injury the ubiquitous bacillus circulating in the blood of the injured part gains the upper hand owing to arrest of phagocytosis. Perhaps there is not one whom I have the honour of addressing who has not been struck by the remarkable fact that tuberculous disease of the testicle so frequently follows blows or contusions of the organ which were unaccompanied by any open wound or breach of surface. Equally striking and suggestive is the very common occurrence of spinal caries following blows or sprains of the vertebral column. Applying this hypothesis to the elucidation of the mysterious frequency with which phthisis follows long after simple pneumococcal or streptococcal pleurisies and other non-tuberculous chest affections the etiology of many examples of tuberculosis becomes a simple matter.

In conclusion, I would venture to suggest that, though we still are hardly justified in assuming that phthisis never occurs from the inhalation of dried sputum dust or from the breathing of the spray ejected in the act of coughing, it appears to be conclusively proven that, as forcibly put by Ravenel, the alimentary tract is a frequent portal of entry for the tubercle bacillus, which is able to pass through the intact mucous membrane of the bowel without producing any local lesion at the point of entrance, that this event is especially frequent in children, and that the milk of tuberculous cows is the common source in these cases. Probably at no distant date the contention of Calmette will be accepted that in the immense majority of cases pulmonary tuberculosis is not contracted by inhalation, but, as taught by von Behring, the germs enter through the intestinal tract. Future research may explain how in China, where tuberculosis is everywhere prevalent amongst the natives, the consumption of the milk of bovines is practically *nil*, as I have been informed by Mr. D. Duncan Main of Hangchow.

The previously mentioned considerations of the etiology of human tuberculosis have their obvious bearing upon our action in regard to the introduction of measures of prevention which are now occupying the attention of the entire profession in its crusade against phthisis, and I am proud to

state that nowhere in His Majesty's dominions is this crusade more vigorously active than it is in Ireland under the auspices and guidance of Her Excellency the Countess of Aberdeen, about whose work I can the more unhesitatingly speak since I have been unable to take any direct part in it. The present movement is certain materially to diminish ultimately the appalling mortality of this dread disease, and we must not be cast down if immediate results are not obvious, bearing in mind that—

> "For while the tired waves, vainly breaking,
> Seem here no painful inch to gain,
> Far back, through creeks and inlets making
> Comes silent, flooding in, the main!"

The Croonian Lectures

ON

INBORN ERRORS OF METABOLISM.

Delivered before the Royal College of Physicians of London on June 18th, 23rd, 25th, and 30th, 1908,

BY ARCHIBALD E. GARROD, M.A., M.D. OXON., F.R.C.P. LOND.,

ASSISTANT PHYSICIAN TO, AND LECTURER ON CHEMICAL PATHOLOGY AT, ST. BARTHOLOMEW'S HOSPITAL; SENIOR PHYSICIAN, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET.

LECTURE III.*

Delivered on June 25th, 1908.

CYSTINURIA.

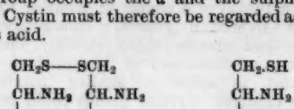
MR. PRESIDENT AND FELLOWS,—Our knowledge of cystin and of cystinuria alike dates from the year 1810, in which year Wollaston[1] described a previously unknown variety of urinary calculus, of which two specimens had come into his hands. The first of these had been removed from the bladder of a young child. Seeing that both stones had been found in the urinary bladder Wollaston assigned to the new compound of which they were composed the name of cystic oxide.

It was Berzelius[2] who suggested the change of name from cystic oxide to cystin, and of this new name, which has since been universally adopted, Civiale wrote,[3] in 1838, that although it corrected an error of chemistry it perpetuated an error of physiology, for cystin is excreted by the kidneys and does not have its origin in the bladder.

The sediments of hexagonal crystals found in urine, upon which the diagnosis of cystinuria is so often based, were first observed by Stromeyer[4] in 1824 and by Prout[5] in 1825.

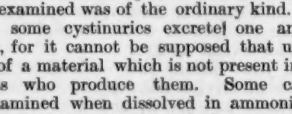
Prout made the earliest analysis of cystin, but being unaware of the presence of sulphur in it he reckoned the contained sulphur as oxygen. Baudrimont and Malaguti[6] announced that cystin contains sulphur in 1837, no less than 27 years after Wollaston's discovery, and in the year following Thaulow[7] published a complete analysis which was in accord with that of Prout, save that half the oxygen of his reckoning was replaced by sulphur.[8]

To Goldmann and Baumann[9] we owe the recognition of the fact that cystin is an amino-derivative of thiolactic acid, in which two molecules are linked together by their sulphur atoms, whereas cystein, which is easily obtained by reduction of cystin, contains an SH group in its single molecule. In Baumann's formula the sulphur atom and the amino-group were represented as being both attached to the α-carbon atom, but Friedmann[10] has more recently shown that this is not the case, but that the amino-group occupies the α and the sulphur atom the β position. Cystin must therefore be regarded as di-α-amino-β-thio-lactic acid.



Since then the synthesis of this compound, which had repeatedly been attempted without success, has been accomplished by Erlenmeyer, jun.,[11] and its formula may be regarded as finally established.

The revised formula renders possible the existence of an isomeric cystin, with the composition of di-β-amino-α-thiolactic acid:—



And this substance also has been synthetically prepared by Gabriel.[12]

Carl Neuberg and P. Meyer[13] have put forward the view that some cystin calculi consist wholly or in part of this isomeric cystin, although they found that the cystin of sediments and that which is present in solution in the urines which they examined was of the ordinary kind. This would imply that some cystinurics excrete one and some the other cystin, for it cannot be supposed that urinary calculi are formed of a material which is not present in the urine of the patients who produce them. Some calculi which Neuberg examined when dissolved in ammonia yielded on evaporation of the ammonia acicular crystals which he believed to consist of iso-cystin. This view has not met with acceptance from other investigators. The great majority of the calculi are undoubtedly composed of ordinary cystin, which is deposited in hexagonal plates from ammoniacal solutions. That the materials obtained from proteins and from such calculi are identical in their chemical and physical properties, including their effect upon the polarised ray, has been proved by Rothera,[14] Abderhalden,[15] and Gaskell.[16] Moreover, Emil Fischer and Zuzuki,[17] who examined some of the same calculus material which Neuberg used, found that it gave a pronounced red colour with Millon's reagent, and they suggest that the acicular crystals described consisted of tyrosin. I have never obtained the acicular crystals from any cystin calculus which I have examined, although slender hexagonal prisms were not infrequently obtained. It is obvious that the occurrence of iso-cystin as a metabolic product is as yet very far from proven.

There are a few scattered records, of the last century, of the detection of cystin in animal tissues. Cloetta[18] found it in the kidneys of an ox but failed to obtain it from other ox kidneys. Scherer[19] isolated cystin from the liver of a man who had died from typhoid fever, and Kulz[20] obtained it on one occasion among the products of pancreatic digestion *in vitro*. Such observations lent support to the view which had been held all along that the sulphur of proteins was the parent of the sulphur of cystin, which was regarded as an intermediate product of sulphur metabolism.

The year 1899 was marked by a great advance in our knowledge of the origin of cystin, for in that year K. A. H. Mörner[21] showed that cystin could be obtained in abundance by the hydrolysis of hair. Soon afterwards G. Embden[22] obtained it in like manner by the hydrolysis of serum- and egg-albumins. Not only was there thus provided a ready source of supply of this compound, which had previously only been obtainable from the rare cystin calculi and from the no

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* Lectures I. and II. were published in THE LANCET of July 4th (p. 1) and 11th (p. 73), 1908, respectively.

1 Philosophical Transactions of the Royal Society, 1810, vol. c., p. 223.
2 Traité de Chimie, 1833, vol. vii., p. 424.
3 Comptes Rendus de l'Académie des Sciences, Paris, 1838, vol. vi., p. 897.
4 Annals of Philosophy, 1824, vol. viii., p. 146.
5 On Stomach and Urinary Diseases, second edition, 1825, p. 166.
6 Comptes Rendus de l'Académie des Sciences, Paris, 1837, vol. v., p. 394.
7 Annalen der Chemie (Liebig's), 1838, vol. xxvii., p. 197.
8 Baudrimont and Malaguti state (Journal de Pharmacie, 1838, vol. xxiv., p. 633) that they presented a complete analysis to the Académie des Sciences in 1837, but I can find no published account of this. The Comptes Rendus for that year contain only a brief note of their paper, in which the presence of sulphur in cystin is mentioned.
9 Zeitschrift für physiologische Chemie, 1888, vol. xii., p. 254.
10 Hofmeister's Beiträge zur chemischen Physiologie und Pathologie, 1902, vol. iii., p. 1.
11 Berichte der deutschen chemischen Gesellschaft, 1903, vol. xxxvi., p. 2720.
12 Ibid., 1905, vol. xxxviii., p. 637.
13 Zeitschrift für physiologische Chemie, 1905, vol. xliv., p. 472.
14 Journal of Physiology, 1905, vol. xxxii., p. 175.
15 Zeitschrift für physiologische Chemie, 1907, vol. li., p. 391.
16 Journal of Physiology, 1907, vol. xxxvi., p. 142.
17 Zeitschrift für physiologische Chemie, 1906, vol. xlv., p. 405.
18 Liebig's Annalen, 1856, vol. xcix., p. 299.
19 Jahresbericht für Chemie, 1857, p. 561.
20 Zeitschrift für Biologie, 1884, vol. xx., p. 1.
21 Zeitschrift für physiologische Chemie, 1899, vol. xxviii., p. 395.
22 Ibid., 1901, vol. xxxii., p. 94.

less rare urinary sediments, but also it was shown that cystin has a place among the numerous α-amino-acids of which the complex molecules of proteins are built up. Like other primary protein fractions it is contained in widely different proportions in different members of the protein group.

Whether or no cystin is the sole protein fraction which contains sulphur, and is responsible for the entire sulphur contents of proteins, save the small quantity of sulphate which they hold apparently in some sort of combination, cannot be regarded as finally decided. Mörner's work shows that all the sulphur of some proteins is in this form, but it is not yet proved that other sulphur compounds obtained from certain substances of the group are derivatives of cystin. Thus the α-thio-lactic acid which has frequently been obtained offers obvious difficulties in this respect, for in it the sulphur atom occupies the α position, whereas in cystin it is attached to the β carbon atom.

Some account of what is known concerning sulphur metabolism forms a necessary preliminary to any discussion of the disturbance which it undergoes in cystinuria. However, our knowledge concerning it is far less advanced than that of the metabolism of nitrogenous compounds; the processes at work are evidently of considerable complexity and it appears certain that the cystin of the proteins broken down in the body does not all follow the same catabolic path. Almost the whole of the sulphur of the proteins of food and of tissues ultimately appears in the urine, for little of it is excreted by way of the alimentary canal. A small portion is present in the saliva and gastric contents as sulphocyanide, but as the sulphocyanide grouping is not represented in protein molecules it must be supposed that it is formed by synthesis within the organism. This fraction is ultimately reabsorbed from the alimentary canal and is excreted, at least in part, unchanged in the urine. A more considerable sulphur fraction goes to form the taurin of the bile and this portion too appears in the urine, probably as a part of the neutral sulphur. The bulk of the sulphur takes a more direct route and is excreted as sulphates. Of the urinary sulphur, by far the greater part is in such fully oxidised form and only some 14-20 per cent. is contained in a number of unoxidised or incompletely oxidised constituents which go to make up what is known as neutral sulphur. Of the sulphates, the output of which may be swelled by sulphates absorbed as such from the alimentary canal, some portion is in combination as aromatic or ethereal sulphates; the greater part, some 90 per cent. of the total, is in the form of simple salts. The formation of the aromatic sulphates is usually ascribed to the working of a protective mechanism, by means of which aromatic substances of harmful nature, such as are apt to be absorbed from the alimentary canal, are rendered harmless and inert. The ratio of aromatic to simple sulphates is therefore regarded as affording a valuable index of the amount of protein decomposition brought about by the bacteria which inhabit the alimentary canal. Folin has recently thrown doubt upon this prevalent view, and seeing that the output of aromatic sulphate is little affected by a change from a diet rich in proteins to one poor in such constituents, he classes these compounds among the products of tissue metabolism as distinguished from that of the proteins of the food. However, the large amount of evidence available upon the other side—the increased output of aromatic sulphates in cases in which intestinal decomposition is abnormally active, the conversion of the whole of the sulphate into aromatic sulphate in some cases of carboluria, and the effects of intestinal disinfection in limiting the output—appear to me to call for the production of stronger evidence than has yet been brought forward before the accepted view need be given up. As F. G. Hopkins [23] has suggested, the comparative uniformity of the excretion of these compounds upon widely different diets may well be due to the want of conspicuous variations in the bacterial activity in the intestine, a factor which is not known to be dependent upon the amount of protein contained in the food.

That variations in the amount of protein in the diet, although they influence very conspicuously the output of sulphates in the urine, have little effect upon that of neutral sulphur is a well-established fact, from which Folin concludes that the latter is made up of products of tissue metabolism as distinguished from that of protein foods. He compares the neutral sulphur with the endogenous uric acid and kreatinin among nitrogenous waste products, whereas the sulphates may be compared to urea. Abstention from food causes relative increase of neutral sulphur and, it is said, an absolute increase also, and so does the increased breakdown of tissue proteins which is brought about by certain toxic substances, such as chloral and chloroform.

Of the materials which go to make up the so-called neutral sulphur our knowledge is as yet very incomplete. Some is probably derived from taurin; the cystin-like compound found by Baumann and Goldmann may contribute a fraction; minute quantities of sulphocyanide have already been mentioned, and among the sulphur-containing substances must be reckoned certain little-known acids of high molecular weight, but which do not yield the reactions of proteins, to which the names of uroproteic and uroferric acids have been assigned. According to Dombrowski [24] the essential yellow pigment of urine, urochrome, is also a sulphur compound. In the urine of animals there have been met with also products of the decomposition of cystin in the alimentary canal, such as thio-sulphates, methyl mercaptan, and ethyl sulphide.

Some interesting experiments carried out by Baumann and Preusse [25] and Jaffe,[26] at a time when it was not yet known that cystin is one of the primary fractions of proteins, were of much importance as showing that it is present in the animal organism as an intermediate product of protein metabolism. These investigators found that when monochlorbenzene or monobrombenzene was administered by the mouth to a dog there appeared in the urine of the animal a compound known as a mercapturic acid, which is excreted in combination with glycuronic acid. The process which leads to the formation of the mercapturic acid may be classed among the chemical protective processes, cystein being taken into combination with the halogen-benzene, just as glycocoll combines with benzoic acid to form hippuric acid. Mester [27] afterwards found that when a halogen benzene was taken by a man hardly any excretion of mercapturic acid resulted. When it was shown that the rational formula of cystin required revision the force of this evidence was apparently destroyed, supposing that the formula of the mercapturic acid as given by Baumann were correct; but Friedmann [28] followed up his work on cystin itself by a reinvestigation of the mercapturic acids and showed that their formulæ also required correction in a similar sense. Consequently the excretion of mercapturic acid by dogs after the administration of brombenzenes was reinstated as a true experimental cystinuria, such as Baumann and Jaffe originally believed it to be.

Of the cystin formed in the breaking down of proteins within the body, a portion, which has been estimated at some 30 per cent. of the total amount, is set apart for the formation of taurin, which is found in the bile in combination with cholalic acid, as taurocholic acid. Taurin stands in a simple chemical relationship to cystin as the following formulæ show:—

Cystin.	Cysteic acid.	Taurin.
$CH_2S—SCH_2$ $\vert \quad \vert$ $CH.NH_2 \quad CH.NH_2$ $\vert \quad \vert$ $CO.OH \quad COOH.$	$CH_2.SO_3.OH$ $\vert$ $CH.NH_2$ $\vert$ $CO.OH.$	$CH_2SO_3.OH$ $\vert$ $CH.NH_2.$

and it has actually been obtained from it, *in vitro*, by Friedmann.[29] It is obvious that the cystin destined to follow this metabolic path must be set apart at a very early stage of catabolism before either the sulphur atom or the amino-group has been removed, and there is evidence that the removal of both of these is early effected.

The question whether the taurin, as such, combines directly with cholalic acid to form taurocholic acid, or whether the combination first occurs with cystin itself or with some other precursor of taurin, taurocholic acid being afterwards produced by oxidation, is still an open one. In favour of the latter view may be quoted an observation made by L. Blum [30] that when cystin is injected into the portal circulation of an

[23] Guy's Hospital Gazette, 1907, vol. xxi, p. 424.

[24] Bulletin de l'Academie des Sciences de Cracovie, 1907, p. 777.
[25] Zeitschrift für physiologische Chemie, 1879, vol. vii., p. 159.
[26] Berichte der deutschen chemischen Gesellschaft, 1879, vol. xii., 1093.
[27] Zeitschrift für physiologische Chemie, 1889, vol. xiv., p. 109.
[28] Hofmeister's Beiträge zur chemischen Physiologie und Pathologie, 1903, vol. iv., p. 486.
[29] Ibid., 1902, vol. iii., p. 1.
[30] Ibid., 1904, vol. v., p. 1

animal with a biliary fistula the sulphur of the bile is thereby increased, but that the additional sulphur is neither in the form of cystin nor in that of taurin.

It seems probable that the formation of taurocholic acid is not limited merely by the quantities of cystin and cholalic acid available, although these factors appear to play a part. Thus von Bergmann[31] found that when cystin is given by the mouth to a dog with a biliary fistula the taurocholic acid of its bile is not appreciably increased, whereas if cholalic acid be administered at the same time a conspicuous increase is obtained. On the other hand, sodium cholate when given alone caused an obvious but transitory increase of taurocholic acid. This suggests that no excess of cholalic acid is available in the canine organism but that an excess of cystin is available which is, however, quickly exhausted. Only when an excess of both cystin and cholalic acid were swallowed was taurocholic acid continuously formed in abnormal quantities. In rabbits, on the other hand, Wohlgemuth[32] found that the administration of cystin alone suffices to cause an increased formation of taurocholic acid. Rothera has shown that in man the administration of cholalic acid alone, or of this acid and of cystin together, does not bring about any decrease of the sulphates of the urine such as might be expected to result if an excess of taurin were formed, always supposing that the taurin fraction finally appears in the urine as neutral sulphur. When cystin was swallowed with cholalic acid it was burnt completely to sulphate just as was the case when no cholalic acid was given with it. Goldmann's[33] investigations leave no doubt that the excretion of mercapturic acid which follows the administration of halogen-benzenes to dogs is at the expense of the sulphates of the urine and not at that of the neutral sulphur. In other words, the cystin which is in combination in the mercapturic acid is some of that which in ordinary circumstances would have been fully burnt to sulphuric acid. However, Blum[34] states that when an experimental cystinuria is induced in dogs with biliary fistulæ, presumably by the halogen-benzene method, although this is not stated, the taurin disappears almost completely from their bile, and this would suggest that the mercapturic cystin is that which ordinarily goes to form taurin. If this be so the inference is not to be avoided that under normal conditions the sulphur of taurin is mainly excreted as sulphate. However, there is not a little evidence which points in a contrary direction and which tends to show that the taurin sulphur is excreted as neutral sulphur. Thus Salkowski[35] found that in dogs, and in man also, taurin introduced into the stomach does not increase the output of sulphates, but is largely excreted as taurin-carbamic acid. In rabbits, on the other hand, and probably in the vegetivora in general, the administration of taurin by the mouth leads to an increase of the urinary sulphates. Kunkel's[36] observation that the establishment of a biliary fistula in a dog and the withdrawal of bile from the alimentary canal conspicuously diminished the neutral sulphur in the animal's urine points in the same direction, but Kunkel himself declines to base any generalisation upon an experiment upon a single dog.

The question of the ultimate fate of the sulphur which goes to form taurin is clearly one which calls for further investigation. When cystin itself is introduced into the stomach of animals, even in very large doses, no unchanged cystin is excreted in their urine. In addition to an increase of the sulphates an increase of neutral sulphur has been observed in animals so treated, and this has been largely in the form of thio-sulphates, which are probably formed by the decomposition of cystin in the intestine, and thence absorbed. When doses of a few grammes of cystin are swallowed by a normal man the cystin is wholly burnt to sulphate and no increase of the neutral sulphur has been observed.[37] Polypeptides containing cystin, such as di-alanyl-cystin and di-leucyl-cystin, were found by Abderhalden and Samuely[38] to be dealt with by normal man in the same way as free cystin is. By injecting cystin into the systemic veins of animals L. Blum[39] caused cystin to appear in their urine, but when the injection was made into the branches of the portal vein it was apparently destroyed in the liver and no cystinuria resulted. However, neither Blum nor Rothera,[40] who also tried the experiment, was able to bring about the destruction of cystin by adding it to crushed hepatic tissue. Obviously the whole of the cystin ingested in protein foods, as distinguished from that derived from the tissues, is not burnt straightway to sulphates and excreted as such. Some, as we have seen, is probably utilised in the formation of taurin, and some must escape direct destruction and be built up into the tissue proteins, the cystin content of which must necessarily be maintained.

We may now turn to the consideration of the derangement of sulphur metabolism in cystinuria, in virtue of which the subjects of that anomaly excrete some part of their cystin as such in their urine, often to their serious disadvantage. That cystinuria is less rare than alkaptonuria I am convinced, although I cannot bring forward any statistical evidence in support of this statement, which is based upon personal experience acquired during a search for examples of both anomalies during the past ten years. That a far larger number of cases of cystinuria than of alkaptonuria are on record counts for little, for the former has been known for well-nigh a century, whereas our knowledge of the latter does not extend back more than 60 years. Moreover, the surgical consequences of cystinuria are such as compel attention. To the greater frequency of the condition in males than in females, a characteristic which it shares with other inborn chemical errors; to the evidence of its congenital occurrence and its persistence, and to its so frequent transmission from generation to generation in a family, I referred at some length in my first lecture.

The liability to the formation of calculi composed of cystin, and to other urinary disorders such as cystitis, gives to cystinuria a practical as well as a theoretical importance, as its study may possibly lead to the discovery of some means of averting its evil consequences. It may even happen that cystin is deposited in crystalline form in the organs and tissues of a cystinuric, as sodium biurate is in those of a victim of gout. Only one case of the kind is as yet on record. An infant, described by Abderhalden,[41] died at the age of 21 months with symptoms of inanition. The child was one of a family which included a number of cystinurics. At the necropsy the internal organs showed innumerable white specks, visible to the naked eye, which were found to be deposits of cystin. From the spleen cystin was readily extracted by ammonia and was deposited from the solution in hexagonal plates, the nature of which was fully confirmed by chemical methods. In the few other available records of post-mortem examinations of cystinurics no mention is made of such deposits in the tissues.

The urine of cystinurics has been described by Golding-Bird and others[42] as possessing an odour not unlike that of sweet-briar and as assuming a greenish tint on standing and acquiring an odour like that of putrid cabbage when decomposition sets in. Bence Jones has even described one specimen which assumed a bright apple-green tint. I cannot say that I have ever noticed a smell recalling that of sweet-briar from such urines nor any distinctly green tint, but the odour of sulphuretted hydrogen which is given off in decomposition is sufficiently obvious. The deposits of crystalline cystin which are thrown down from such urines are not very abundant but may often be seen with the naked eye to consist of glancing crystals. Under the microscope these appear as hexagonal plates, the edges of which usually show paired inequalities of length. Hexagons of different sizes are often superposed upon each other and with the plates longer or shorter hexagonal prisms are occasionally intermixed. In some specimens the crystals show a radiating striation and jagged edges but they still retain roughly hexagonal forms. Fresh crystals are deposited after the urine has been passed, especially on addition of acetic acid, and Delépine[43] came to the conclusion that in a case which he investigated their deposition was favoured by the presence of an organism, probably one of the blastomycetes, which

[31] Ibid., 1903, vol. iv., p. 192.
[32] Zeitschrift für physiologische Chemie, 1903, vol. xl., p. 81.
[33] Ibid., 1885, vol. ix., p. 260.
[34] La Semaine Médicale, 1906, vol. xxvi., p. 554.
[35] Virchow's Archiv, 1877, vol. lviii., p. 460.
[36] Archiv für die gesammte Physiologie (Pflüger's), 1877, vol. xiv., p 344.
[37] Rothera: loc. cit., sub. 14.
[38] Zeitschrift für physiologische Chemie, 1906, vol. xlvi., p. 187.
[39] Hofmeister's Beiträge zur chemischen Physiologie und Pathologie, 1903, vol. v., p. 1.
[40] Loc. cit., sub. 14.
[41] Zeitschrift für physiologische Chemie, 1903, vol. xxxviii., p. 557.
[42] Urinary Deposits, London, 1851, p. 181.
[43] Proceedings of the Royal Society, 1890, vol. xlvii., p. 198.

could be separated by filtration. No comfirmation of this has yet come from other observers.

The ready solubility of cystin in ammonia affords a ready means of identifying the crystals, which are insoluble in acetic acid. In case of doubt the following test may be applied, which was described by Wollaston in his original paper on Cystic Oxide. Some crystals are dried upon a glass slide and covered with a cover-slip. A drop of strong hydrochloric acid is then allowed to flow over the deposit and as each crystal is bathed in the acid there springs from it a stellate cluster of delicate prisms which grow rapidly under the eye and which are composed of cystin hydrochlorate. If now a drop of water be allowed to dilute the acid the prisms melt away as rapidly as they were formed. The urinary crystals which are most likely to be mistaken for the hexagons of cystin are the almost colourless plates of uric acid which are sometimes deposited from feebly pigmented urines and which may assume roughly hexagonal forms.

The cessation of deposits must not be taken as evidence that a patient has ceased to excrete cystin, for when no crystals are found in the untreated urine, and especially in such as is alkaline in reaction, the addition of acetic acid may cause their deposition. Even in acid urine cystin is by no means insoluble. However, there is reason to believe that the excretion of cystin may be actually suspended, at least for a time. Thus Loewy and Neuberg[44] failed to detect any either as sediment or in solution in the urine of a medical man who had undoubtedly been cystinuric at a former period, and Lewis and Simon[45] have described a case in which cystin could no longer be found although cadaverin was isolated from the urine. It is noteworthy that in both cases the urine yielded hydrogen sulphide very readily, and this was attributed by Loewy and Neuberg to an excessive output of neutral sulphur. This suggests that possibly the error of sulphur metabolism persists although the form of its manifestation is changed, and that in such cases some other intermediate product than cystin itself may come to excretion. It may be hoped that further investigations will throw fresh light upon such intermittent or temporary cystinuria. In some of the records of temporary cystinuria the evidence adduced does not suffice to establish a fact of so much importance.

In the fæces of cystinurics no cystin can be found. Dewar and Gamgee[46] state positively that cystin is present in the sweat in some cases and that silver coins carried in the pockets of the patients are apt to become blackened. In a single case in which I examined some collected sweat I failed to find any evidence of the presence of cystin therein.

The error of metabolism of which cystinuria is a manifestation is clearly a far more complex one than that which underlies alkaptonuria and far less uniform in character. Although the excretion of cystin in the urine is apparently a constant feature, and is that by which it has hitherto always been recognised, cystin is by no means the only protein fraction which is implicated and in some cases other amino-acids or their derivatives are to be found in the urine. The commonest of these are the diamines cadaverin and putrescin, which stand in intimate chemical relationship to the diamino-acids, lysin and ornithin respectively, of which the former is a primary constituent of the protein molecule, whilst the latter enters into the composition of another such fraction, arginin. More rarely leucin and tyrosin are excreted unchanged, and it is probable that other amino-acids, less easily detected, will be found to be excreted in some cases. Thus it comes about that cases of cystinuria differ widely among themselves, not only in the number of protein fractions which are implicated but also in their behaviour as regards the individual fractions, so that what is true of one cystinuric may be quite untrue of another.

The cases hitherto investigated admit of classification upon the following lines: 1. In some no diamines and no primary protein fractions other than cystin have been found in the urine. 2 In some the urine has contained cadaverin or putrescin or both, in addition to cystin, but the excretion of diamines is apt to occur in an intermittent manner. 3. In a very few cases leucin or tyrosin or both have been excreted with or without diamines. 4. In a single case, that of Loewy and Neuberg,[47] cystin was present in the urine, but no diamine, leucin, or tyrosin. When diamino-acids were given by the mouth the patient excreted the corresponding diamines, and when tyrosin and aspartic acid were given these were excreted unchanged. In other cases in which similar feeding experiments have been tried no such results have followed the swallowing of diamino- or monamino-acids, and this patient was also exceptional in his method of dealing with cystin introduced by the mouth.

The investigation of the pathogeny of cystinuria has been greatly impeded by the lack of a simple and reliable method for the estimation of cystin in urine, and the methods employed by different observers have been of very different values. The naphthalene-chloride sulphon method employed by Abderhalden[48] is not easy of application. Concentration of the urine under reduced pressure, with the addition of acetic acid, gives results which are presumably reliable, and J. Gaskell's[49] method, recently described, in which the deposition of cystin is aided by the addition of acetone to the urine acidified with acetic acid, is easily carried out, and is satisfactory, save for the detection of very small quantitative variations, in connexion with which the degree of dilution of the urine has a disturbing effect upon the results. The mere addition of acetic acid, without concentration, does not suffice, for, as with Heintz's old method of estimating uric acid, the results obtained are capricious and quite unreliable. The method of Mester,[50] which has been extensively employed, is based upon the assumption that an increase of the ratio of neutral sulphur to total sulphur, beyond the average ratio for normal urines is due to cystin excreted as such. The objections to this indirect method are obvious, in view of the conspicuous effect of diet upon the excretion of sulphates, although, as has been already pointed out, the output of neutral sulphur is little affected by the amount of protein in the food. Alsberg and Folin[51] adopt a different plan of reckoning, by which any increase of neutral sulphur above the average normal output, which they estimate at a lower figure than most other observers, is reckoned as cystin sulphur. This plan avoids the error due to fluctuations of the sulphate excretion, but involves the assumption that the cystin is excreted wholly at the expense of the sulphates, the normal neutral sulphur remaining intact.

As regards the disturbance of sulphur metabolism in cystinuria it is at any rate certain that only a portion of the total cystin of the proteins broken down is excreted as such, and that the error is in no sense complete. Cystinurics always excrete sulphates, and neutral sulphur other than that contained in the cystin. In no single recorded instance has any approach been made to a maximal excretion, which would attain to some five grammes per diem. The figures for the average daily output given by different observers have been obtained by methods of very different degrees of reliability, but if the various records are compared, and especially if one has had opportunities of personal study of a series of cases, it is borne in upon one as highly probable that the excretion of cystin in different cases makes some approach to uniformity and that it averages some 0·3 to 0·5 gramme in the 24 hours.

The figures included in the following table are collected from the published records and from the notes of several cases which have recently been investigated by T. S. Hele[52] in the laboratory under my charge at St. Bartholomew's Hospital. In most instances averages have been calculated from the published figures, and in Caracciolo's case the amount of cystin has been worked out by Mester's method from the figures given in his paper.

It would be unwise to lay too much stress upon the uniformity of many of the figures in view of the differences in the methods employed and their unequal values, but the figures are certainly suggestive, and with the more satisfactory methods of estimation there is more uniformity of results. As regards the large excretion estimated by Mester in his case it may be mentioned that in one of Hele's cases Mester's method of estimation gives an output of about one gramme. If further work with reliable methods should show that the uniformity here foreshadowed is an actual fact

[44] Biochemische Zeitschrift, 1907, vol. ii., p. 438.
[45] American Journal of the Medical Sciences, 1902, vol. cxxiii., p. 838.
[46] Journal of Anatomy and Physiology, 1871, vol. v., p. 412.
[47] Zeitschrift für physiologische Chemie, 1904, vol. xliii., p. 338.
[48] Loc. cit., sub. 41
[49] Loc. cit., sub. 16
[50] Loc. cit., sub. 27
[51] American Journal of Physiology, 1905, vol. xiv., p. 54.
[52] I am much indebted to Mr. Hele for allowing me to make use of these and other unpublished figures from his work. See epitome, Brit Med. Jour., 1908, vol. i. (supplement), p. 440.

and that the quantity of cystin excreted in different cases of cystinuria does not exceed a certain limit, one would be driven to suppose that some definite fraction of the cystin of the proteins broken down escapes its usual fate—such a fraction, for example, as is normally diverted to the formation of taurin.

There is a consensus of opinion among those who have worked at the subject that the unchanged cystin is excreted at the expense of the sulphates rather than at that of the neutral sulphur. The high ratios of neutral sulphur to total sulphur in the urine of cystinurics, which far exceed the normal ratios, bear witness to this, and it is upon the assumption that the neutral sulphur is not implicated that the indirect methods of estimating cystin suggested by Mester and by Alsberg and Folin are based. That the output of sulphates is diminished is a fact which is established beyond question, but the immunity of the normal neutral sulphur does not appear to me to be so well established. Loewy and Neuberg obtained in their case normal values for the neutral sulphur after removal of cystin by concentration of the urine acidified with acetic acid, but Thiele,[53] who employed the same method for the removal of cystin, obtained unduly high values of neutral sulphur after its removal. In a few cases in which cystin excretion has ceased, or nearly ceased, for a time the excretion of neutral sulphur has remained much above the normal. This was so in Loewy and Neuberg's second case and the ready formation of hydrogen sulphide in the case recorded by Lewis and Simon suggests that the same was true for it. Bödtker[54] also obtained ratios of neutral to total sulphur as high as in any investigated case of cystinuria, even when the urine of his patient no longer deposited cystin, even with acetic acid, and when the presence thereof could only be detected by benzoylation after concentration of the urine. Unless we are prepared to admit that precipitation methods may wholly fail, even when cystin is abundantly present in urine, the inference cannot be avoided that under certain conditions cystinurics excrete a sulphur compound which is not free cystin but a compound or unoxidised derivative thereof. If this be so, estimations of cystin cannot be safely based upon variations, either relative or absolute, of the neutral sulphur.

The next question which calls for discussion—namely, whether or no the excretion of cystin is influenced by the amount of protein in the diet—is one of much interest but which cannot yet be regarded as definitely settled. That the output is in part endogenous and derived from the tissue proteins cannot be doubted, for Alsberg and Folin found cystin in the urine of their patient after he had been for 13 days upon a diet which was practically protein-free. They found, however, that although the ratio of neutral to total sulphur was naturally far higher on a protein-free diet the actual quantity of neutral sulphur excreted was considerably greater on a diet rich in protein. As the excretion of neutral sulphur remains almost constant in normal individuals, even on such extremes of dietary, they infer that the increase was in the form of cystin and that the output of that substance, which averaged 0·5 gramme on a nitrogen-free diet, rose to 1 gramme on one rich in protein. In support of this view they adduce the fact that whereas upon the latter diet there was an abundant deposit of crystals, these almost ceased to be deposited when protein was withheld. Further observations, with such extremes of diet, maintained as in the case referred to over considerable periods, and including direct estimations of cystin as well as of total and neutral sulphur, are greatly to be desired. At present there are no other estimations carried out during a period of nitrogen-free diet. Thiele,[55] whose observations were unavoidably restricted to isolated days, and are therefore open to the objection that an unequal rate of excretion of nitrogen and sulphur may come into play, concluded that the output of cystin by his patient was not affected by the nature of the food taken. The cystin extracted by concentration and addition of acetic acid hardly varied in amount on a day of complete abstinence from food on account of an operation with a nitrogen excretion of 5 grammes, on a day of diet poor in protein on which 9 grammes of nitrogen were excreted, and on one of protein-rich diet on which the nitrogen mounted to 17·29 grammes. Moreover, the residual neutral sulphur, excluding that of the separated cystin, showed very slight variations amounting to 0·359 gramme SO_3 on the fasting day and to 0·428 on that of protein-rich diet. Abderhalden and Schittenhelm[56] give two

Table Showing Daily Excretion of Cystin in 19 Cases of Cystinuria.

No.	Sex and age in years of patient.	Daily output of cystin. Calculated average unless otherwise stated.	Method of estimation employed.	Observers and references.
1	M., 18	0·520 grm.	Precipitation by acetic acid.	Niemann: Deutsches Archiv für klinische Medicin, 1876, vol. xviii., p. 232.
2	M., adult.	0·425 ,,	,,	Loebisch: Liebig's Annalen, 1876, vol. clxxxii., p. 231.
3	M., 25	0·241 ,,	,,	Ebstein: Deutsches Archiv, 1879, vol. xxiii., p. 138.
4	F., 23	0·430 ,,	,,	Ebstein: Ibid., 1881, vol. xxx., p. 594.
5	M., 13	0·186 ,,	,,	Stadthagen: Virchow's Archiv, 1885, vol. c., p. 416.
6	F., 41	0·1402 ,,	,,	Leo: Zeitschrift für klinische Medicin, 1889, vol. xvi., p. 325.
7	F., 29	0·19–0·3 ,,	,,	Piccini e Conti: Lo Sperimentale, 1891, vol. xlv., p. 359.
8	F., 65	0·464 ,,	,,	Marriott and Wolf: American Journal of the Medical Sciences, 1906, vol. cxxxi., p. 197.
9	M., adult.	Circ. 1·0 ,,	Mester's method.	B. Mester: Zeitschrift für physiologische Chemie, 1889, vol. xiv., p. 110.
10	F., 50	0·423 ,,	,,	Percival: Archivio Italiano di Clinica Medica, 1902, vol. xli., p. 50.
11	F., adult.	0·454 ,,	,,	Moreigne: Archives de Médecine Expérimentale et d'Anatomie Pathologique, 1899, vol. xi., p. 254.
12	M., 28	0·469 ,, (calculated).	,,	Caracciolo: Riforma Medica, 1907, p. 174.
13	M., adult.	0·471 grm.	Concentration and acetic acid.	Loewy and Neuberg: Zeitschrift für physiologische Chemie, 1904, vol. xliii. p. 338.
14	M., adult.	0·561 ,,	,,	Thiele: Journal of Physiology, 1907, vol. xxxvi., p. 68.
15	M., adult.	0·4 ,,	,,	Abderhalden and Schittenhelm: Zeitschrift für physiologische Chemie, 1905, vol. xlv., p. 468.
16	M., adult.	On protein-rich diet, 1 grm.; on protein-free diet, 0·5 grm.	Alsberg and Folin's method.	Alsberg and Folin: American Journal of Physiology, 1905, vol. xiv., p. 54.
17	F., 23	0·314 grm.	Gaskell's method.	T. S. Hele: Case I.
18	M., 63	0·412 ,,	,,	,, Case II.
19	M., adult.	0·456 ,,	,,	,, Case III.

[53] Journal of Physiology, 1907, vol. xxxvi., p. 68.
[54] Zeitschrift für physiologische Chemie, 1905, vol. xlv., p. 392.
[55] Loc. cit., sub. 53.
[56] Zeitschrift für physiologische Chemie, 1905, vol. xlv., p. 468.

estimations of cystin by the same method in a case described by them. With an excretion of 16·6 grammes of nitrogen the extracted cystin amounted to 0·31 gramme, with 12 grammes of nitrogen to 0·42 gramme. Of earlier observers Leo and Mester expressed the belief that the excretion of cystin in cystinuria is not influenced by diet. In a case under my care, which was investigated by Hele, it was not possible to give any extremes of diet and the capricious appetite of the patient even prevented the maintenance of a constant scale of feeding, but the results obtained pointed to a hardly appreciable augmentation of cystin when the protein of the food was increased.

If the excretion of cystin were directly dependent upon the breaking down of food and tissue proteins alike the ratio $\frac{\text{cystin}}{\text{nitrogen}}$, the C : N ratio, should not vary with the quantities of the same proteins taken but only with the quality of the food proteins—i.e., their richness or poorness in the cystin fraction. In other words, it should behave as does the H : N ratio in alkaptonuria. If, on the other hand, the output of cystin be independent of, or only slightly influenced by, the amount of protein in the food the C : N ratio should fall conspicuously as the protein food is increased, seeing that the nitrogen will be increased thereby but not the cystin.

The following table, calculated from the figures recorded for a number of cases of cystinuria, shows that such a variation of the ratio is constantly observed, but it is not possible to say how far this is due to differences in the quality rather than in the quantity of the proteins taken. The very unequal variations in different cases suggest that qualitative differences may have an important share in bringing about the results.

Table showing Variations of the C : N Ratio in Cystinuria.

Names of observers.	Total N in 24 hours.	C : N ratio.	Method of estimating cystin.
Moreigne ...	4·13 grm.	7·4 : 100	Mester's method.
	16·8 ,,	4·8 : 100	
Percival ...	3·98 ,,	5·9 : 100	,, ,,
	15·1 ,,	3·1 : 100	
Alsberg and Folin ...	Mean 5·19 ,,	9·6 : 100	Absolute increase of neutral sulphur above normal average.
	Mean 14·84 ,,	6·7 : 100	
Abderhalden and Schittenhelm.	12·0 ,,	3·3 : 100	Concentration and acetic acid.
	16·6 ,,	1·08 : 100	
Thiele ...	5·15 ,,	9·4 : 100	,,
	9·1 ,,	6·2 : 100	
	17·29 ,,	2·9 : 100	
Hele: Case I.	4·30 ,,	5·2 : 100	Gaskell's method.
	11·16 ,,	4·2 : 100	
,, Case II.	6·52 ,,	5·52 : 100	,, ,,
	16·90 ,,	3·37 : 100	

Even in Alsberg and Folin's case the C : N ratio was higher on a nitrogen-free diet, which shows that even if the increase of neutral sulphur was all due to increase of cystin this increase was not proportional to the amount of protein added to the diet. The balance of evidence appears to be in favour of the view that the excretion of cystin is not materially influenced by diet; but it must not be forgotten that cases of cystinuria differ widely in their behaviour, and it is conceivable that in one case protein food may augment the output of cystin and in another may not do so. Some observers[57] have noted differences in the quantities of cystin in the day and night urines respectively, but their results have been contradictory, and Hele was unable to find any constant difference in the cases which he investigated.

Much interest attaches to the effects of the administration of cystin, as such, to cystinurics. As we have seen, a normal man burns cystin so given to sulphate, and Alsberg and Folin found that their patient behaved in this respect as does a normal man. Two doses of cystin, obtained by hydrolysis of hair, amounting to 1·2 and 6 grammes respectively, were given by the mouth at different times. The neutral sulphur output was unchanged and the increased excretion of sulphur was wholly as sulphates. In one of our cases Hele obtained a similar result from the administration of five grammes of cystin from hair. Thiele gave 4·6 grammes of the patient's own cystin thoroughly purified. The cystin excreted was estimated by concentration of the urine and addition of acetic acid and showed no increase worthy of mention. The quantities for the day before the cystin day, for the cystin day itself, and for the day following were 0·577, 0·604, and 0·561 gramme respectively. However, on the cystin day there was a very conspicuous increase of neutral sulphur as well as of sulphate, and the total increase of sulphur of both kinds corresponded to 3·526 grammes of cystin, of which increase 35 per cent. was in the form of neutral sulphur. It will be remembered that in this case the output of neutral sulphur, above the normal, was always higher than was accounted for by the cystin extracted from the urine. On Alsberg and Folin's reckoning this patient would have been taken as having excreted some of the cystin given as such. In Loewy and Neuberg's case, which stands wholly apart from all others hitherto investigated, the administration of cystin by the mouth produced far more remarkable results. When five grammes of cystin from hair were so taken the excreted cystin, estimated, as in Theile's case, by concentration with acetic acid, rose from 0·388 gramme per diem to 7·04 grammes in the collected urine of the three days following the administration, an increase which corresponds to the whole of the cystin swallowed. In other words, this cystinuric was quite unable to burn protein cystin given by the mouth, and simply added it to his ordinary daily output. Whether increase of protein food influenced the excretion in this case we are not told. Still more extraordinary was the result when cystin obtained from a calculus was given. The taking of 3·52 grammes of this material caused no increase of cystin in the urine, but there resulted a conspicuous increase of the neutral sulphur, mainly in the form of thio-sulphate. Why in this case cystin obtained from hair and from a calculus respectively should have been dealt with in such wholly different ways by this patient remains a mystery; no solution of which can be suggested unless these authors are right in regarding them as different substances. The excretion of thio-sulphate suggests the possibility that some of the cystin taken by the mouth may sometimes undergo decomposition in the intestine, and that this may account for the increase of neutral sulphur other than cystin in the urine, which has sometimes followed its administration.

The fact that in ordinary cases of cystinuria swallowed cystin is burned to sulphate, as by normal persons, certainly lends support to the view that the cystin which the patients excrete unchanged has its origin in the breaking down of the tissue proteins and not of those of the food. As Thiele showed even the cystin which the patients himself has excreted can be dealt with when it enters the organism by way of the alimentary canal. It is evident that, as the limitation of the error to a part only of the catabolised cystin also indicates, only a certain path of sulphur metabolism is interfered with in cystinuria. If this be so Loewy and Neuberg's patient must be the victim of a distinct anomaly from that manifested in ordinary cases and, as we shall see, there is much other evidence to support this view.

Before leaving the subject of the disturbance of sulphur metabolism in cystinuria certain observations upon the effects of administration of cholalic acid must be referred to.

Von Bergmann's observations upon the effects of such administration to dogs with biliary fistulæ suggested to Simon and Campbell,[58] and independently to Alsberg,[59] that the excretion of cystin in the urine might possibly be due to deficient formation of cholalic acid and that the cystin set apart for the formation of taurocholic acid might on this account fail to be utilised and be excreted unchanged. If this were so the administration of cholalic acid might have the effect of restricting or of abolishing the output of urinary cystin. This leads me to mention that, as Blum has

[57] Beale: Kidney Diseases, Urinary Deposits, and Calculous Disorders, third edition, 1869, p. 385. Ebstein: Deutsches Archiv, 1881, vol. xxx., p. 594. Piccini e Conti: Lo Sperimentale, 1891, vol. xlv., p. 353. Bartels: Virchow's Archiv, 1863, vol. xxvi., p. 419.

[58] Johns Hopkins Hospital Bulletin, 1904, vol. xv., p. 164.

[59] Journal of Medical Research, 1904, vol. xiii., p. 105.

pointed out, what is most of all to be desired, as an observation likely to throw valuable light upon the nature of the error in cystinuria, is an examination of the bile of patients who exhibit this anomaly. No such examination has yet been recorded. Possibly in these days of biliary surgery an opportunity may present itself, but even an analysis of the bile obtained from the gall-bladder at a necropsy should throw important light upon the question whether cystinurics form taurocholic acid in the ordinary way. If it be correct that much of the neutral sulphur of urine is derived from taurin, the fact that cystinurics apparently excrete normal quantities of neutral sulphur in addition to cystin suggests that the formation of taurocholic acid is not interfered with, but more direct evidence would be of far greater value.

Alsberg showed that when cholalic acid is administered to cats protein catabolism is increased, as is evidenced by an increased excretion of nitrogen, as well as of total sulphur both in the form of neutral sulphur and of sulphate. Rothera[60] found the same to be true for man, and the taking of cholalic acid by the mouth caused no diminution of the urinary sulphate, such as might be expected if the taurin fraction is excreted as neutral sulphur and the cholalic acid causes an increased formation of taurin.

There are obviously great difficulties in arriving at any definite conclusions as to the influence of cholalic acid upon taurocholic formation in the absence of a biliary fistula, and for this reason the observations of Simon and Campbell are not conclusive. They could obtain no evidence that in their cystinuric the taking of cholalic acid had any influence upon the output of cystin, but this was not estimated by any direct method and the fluctuations of the excretion of neutral sulphur during the period over which the observations extended were very wide, so that it is not easy to gauge the effect of the cholalic acid upon the ratio of neutral sulphur to sulphate.

All that we know of the pathology of cystinuria renders it highly improbable that the formation of cholalic acid is primarily at fault, but these observations are of special interest as embodying a rational attempt to influence by treatment a condition which may give rise to grave morbid events.

As I have already pointed out, the excretion of cystin in the urine is after all only one of the manifestations of the metabolic anomaly which we know as cystinuria. Other protein fractions than cystin may also be implicated in the error, with the result that cadaverin and putrescin, leucin and tyrosin may be excreted side by side with cystin, but the consideration of these further aspects of the subject must be deferred to my concluding lecture.

OBSERVATIONS ON THE OPSONIC INDEX IN PULMONARY TUBERCULOSIS.

BY D. LLOYD SMITH, M.B. LOND.,
MEDICAL DIRECTOR, CROSSLEY SANATORIUM, CHESHIRE;
J. A. D. RADCLIFFE, M.B. R.U.I.,
ASSISTANT MEDICAL OFFICER;
DOUGLAS ELDER, M.B. LIVERP.,
LATE ASSISTANT MEDICAL OFFICER;
AND
ALAN CROSSLEY, B.A.,
PATHOLOGIST.

So much has been written of late on the treatment of diseases by vaccines controlled by estimations of the opsonic index on the lines laid down by Sir A. E. Wright that it is with great diffidence we add to what has been already published. As there are, however, in a sanatorium unusual opportunities of observing cases of pulmonary tuberculosis in various degrees, with and without complications (laryngeal, glandular, and renal), the following account of the research work undertaken and of the results obtained may not be without interest. In all our investigations the technique adopted was that of Wright and Douglas. One of the earliest difficulties encountered was the fact that different observers counting the same slides did not invariably get approximate results, and to illustrate the amount of this personal error we append two charts (Charts 1 and 2). Chart 1 shows the curves running moderately parallel, the difference never amounting to more than 0·3, and this only on six occasions out of a total of 16 counts. Chart 2, on the other hand, shows greater differences. Out of 16 counts six varied more than 0·3 and one as much as 0·8.

From a consideration of these two charts one would therefore be inclined to interpret any extreme variation in an opsonic curve as being due to an error in counting rather than to a sudden fluctuation in the index, provided of course that the patient is not receiving vaccine treatment or undergoing auto-inoculation. To avoid the latter contingency as far as possible the patients during our investigations were kept at rest. Another error to be contended with is the fact that one is working with a control which is not a "constant," and therefore one is estimating the value of a patient's opsonic power against a control which may yet be exhibiting very appreciable variations. To eliminate as far as possible this particular source of error it has been our custom to use two and often three normal persons as "controls" and taking the average of these control counts as our unity. By this means we consider that extreme errors are less liable to occur than by "pooling" the control sera and making one preparation. Appended is a table showing the average number of bacilli ingested per leucocyte in the control specimens. It should be stated that in each case the same emulsion was used, the leucocytes taken from the one source, and the slides counted by the same person.

1907.	C.	R.	S.	1907.	C.	R.	S.
Oct. 1	0·9	1·1	1·1	Oct. 25	0·9	0·9	0·75
,, 2	1·6	1·3	—	,, 28	1·0	1·2	0·8
,, 3	—	0·7	0·8	,, 30	1·1	0·8	0·8
,, 4	—	1·4	1·1	Nov. 1	1·1	1·2	1·0
,, 7	1·1	1·0	—	,, 4	1·1	1·2	1·1
,, 8	—	1·1	0·9	,, 5	1·2	1·2	0·8
,, 9	1·3	0·9	—	,, 6	1·0	1·0	1·5
,, 10	1·2	1·4	—	,, 7	1·2	1·1	—
,, 11	0·9	0·9	—	,, 12	1·0	1·2	—
,, 14	1·1	0·9	—	,, 13	1·0	1·2	—
,, 15	—	1·3	1·1	,, 14	1·3	1·1	1·3
,, 16	1·6	1·8	1·2	,, 22	1·3	1·4	0·7
,, 17	0·8	—	0·6	,, 25	0·9	0·9	1·0
,, 18	0·8	0·7	1·1	,, 26	0·9	1·0	—
,, 21	0·6	0·8	0·7	,, 27	0·6	0·7	—
,, 22	1·2	1·3	—	,, 28	0·6	1·2	0·9
,, 23	0·5	0·7	—				

In looking over our charts and noting the variations occurring in their curves it appeared to us that such excursions might be much more frequent than was apparent. With this idea in view hourly estimations were made in the case of two patients with phthisis and renal complications. Charts 3 and 4 show a very appreciable variation in the opsonic power from hour to hour, although the patients were resting. The important conclusion which we have come to from these charts is that one cannot determine on the result of one estimation of the index whether an injection of tuberculin should be given or not. Chart 4 brings this point out more clearly. In this instance on the result of the blood count at 4 P.M. an injection of tuberculin was given the same evening at 9 o'clock (A), while the later blood counts show a rapid fluctuation. This is certain—an injection would not have been given had we known the result of the 7 P.M. blood count.

For the past year or so in carrying out observations on the indices of patients we have found different types which we venture to classify according to their suitability for inoculation.

Types of cases.—A. Those showing extreme and rapid oscillations in opsonic power (Charts 5, 6, 7, and 8). B. Those with persistently high level indices (Charts 9, 10, and 11). C. Those with constantly low indices (Charts 12, 13, 14, 15, and 16). These charts were all of patients with only a moderate extent of lung mischief, and to avoid possible errors, such as might be attributed to auto-inoculation, the blood was always taken after a long night's rest and before rising in the morning. In all our cases we were guided as to whether "tuberculin" should be given by the consideration of the curve of four or more estimations, and such treatment was carried out only in patients with low level indices (Type C).

[60] Loc. cit., sub. 14.

CHART 1.

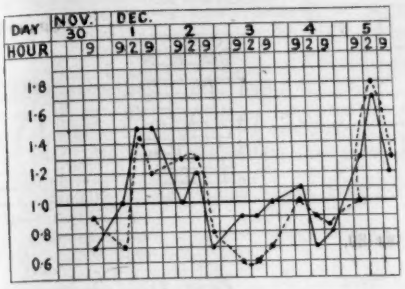


CHART 2

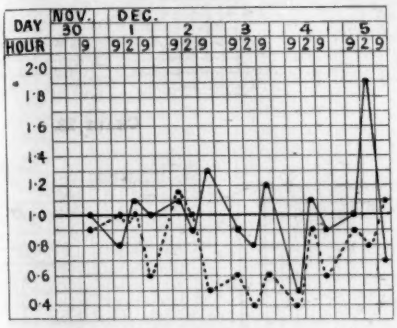
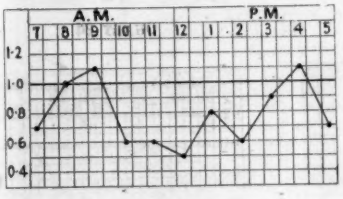


CHART 3.



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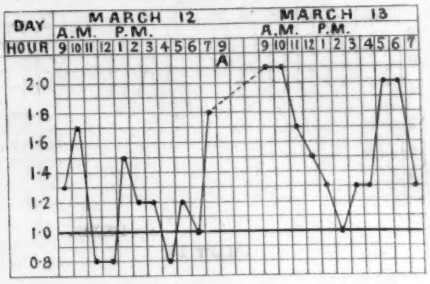
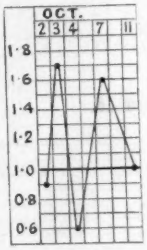


A = T.R. 1-1000th.

CHART 5.



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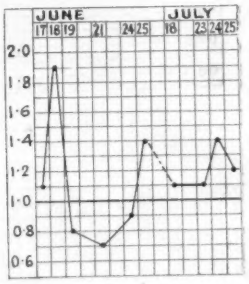


CHART 7.

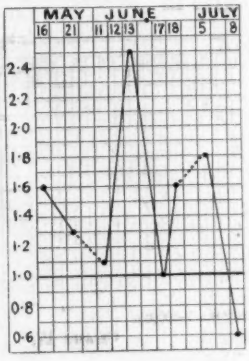


CHART 8.

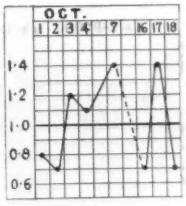


CHART 9.

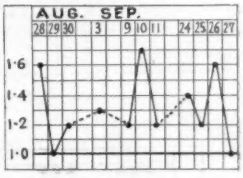


CHART 10.

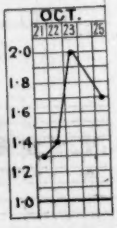
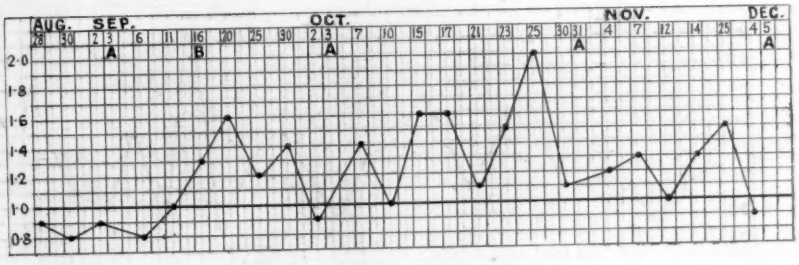


CHART 11.

CHART 12.



A = 1-2000th. B = 1-4000th

CHART 13.

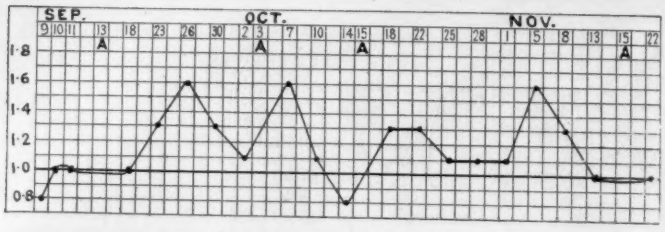
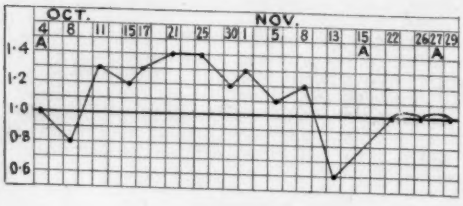


CHART 18.

CHART 19.

CHART 14.



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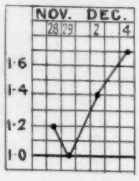


CHART 21.

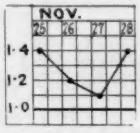


CHART 22.

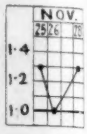


CHART 15.

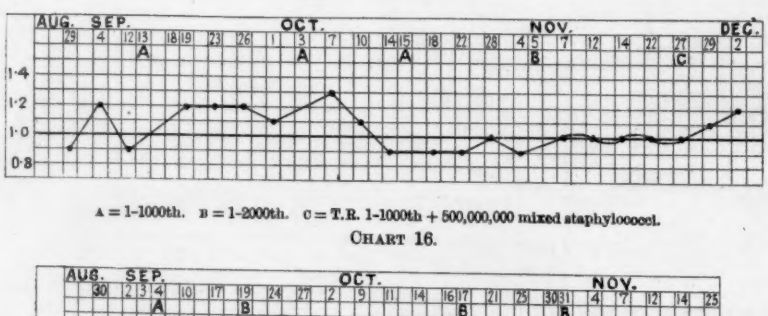


CHART 23.

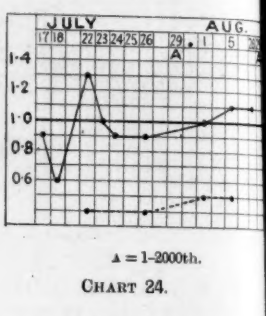


CHART 16.

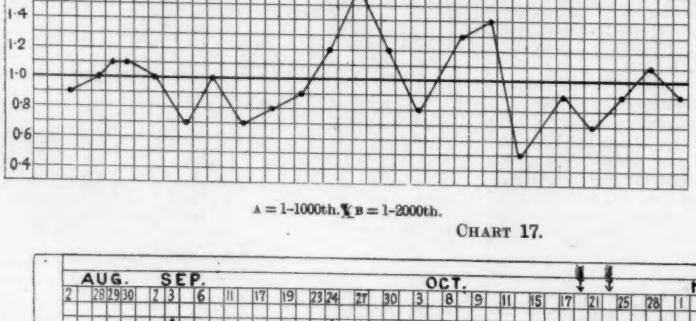


CHART 24.

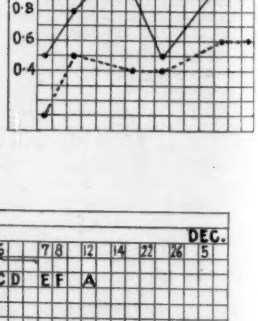
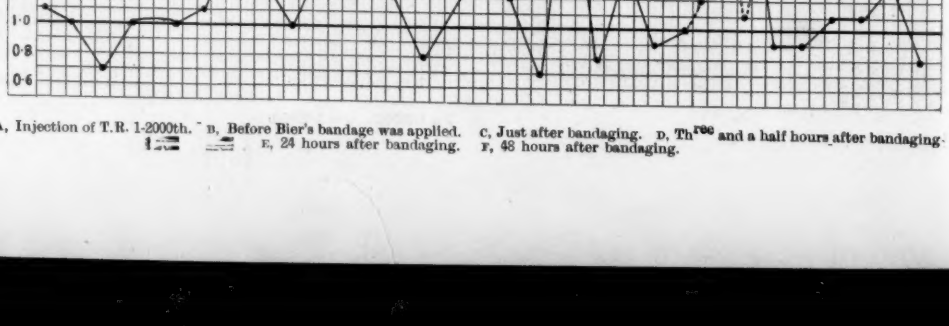


CHART 17.



A, Injection of T.R. 1-2000th. B, Before Bier's bandage was applied. C, Just after bandaging. D, Three and a half hours after bandaging. E, 24 hours after bandaging. F, 48 hours after bandaging.

A. (Those showing extreme and rapid oscillations in opsonic power.) In cases of this type it was thought that as even at rest the auto-inoculations were so marked the results of tuberculin treatment would probably be unfavourable.

B. (Those with persistently high level indices.) Injections were not given here as we considered it would not be possible to improve the patient's opsonic power and the risk of inducing a negative phase would have been incurred.

C. (Those with low indices.) Injections were instituted in these cases and apparently with excellent results.

Charts illustrating the effects of tuberculin injections follow.

(Clinically all the cases treated have shown marked amelioration.)

Chart 12 applies to a case of pulmonary and glandular (cervical) tuberculosis showing previously to treatment a persistently low level index. This case, like most of the others in this category, exhibited a slow response to the first injection and with each succeeding inoculation a shortening of the interval between injection and positive phase development. It also shows an apparently successful attempt to superpose positive phase on positive phase by means of the injection of a minute dose (B) at the height of the curve produced by the first inoculation.

Chart 13 refers to a similar case of pulmonary phthisis with enlargement of the cervical glands. Here there was a definite response to tuberculin. One was struck by the marked diminution that ensued in the size of the glands even after the first inoculation, whereas a change in the character of the physical signs in the chest only took place at a much later date.

Chart 14. This was a case of early and uncomplicated phthisis in which tubercle bacilli had been found in the sputum. The chart refers to a period when treatment had been in progress for about three months and shows a very marked prolongation of the positive phase after a short negative phase, although after the previous inoculations the curve ran on more typical lines. The clinical condition showed steady improvement and after five months' treatment the physical signs and symptoms were practically *nil*.

Chart 15. A very interesting case of an old-standing tuberculous disease of the lower end of the femur which had repeatedly been operated upon. On admission we found numerous sinuses leading down to the bone besides which the patient had considerable pain and impairment of function. Tuberculin treatment was followed by a steady though slow improvement. This portion of his chart shows a period of the treatment in which the patient ceased to respond to the inoculations, concomitantly with some retrogression in his disease and with the formation of an abscess in the soft parts higher up the thigh. The patient was given a prophylactic inoculation of staphylococcic vaccine (C) and the abscess then evacuated. A simultaneous injection of tuberculin produced the usual positive phase.

Chart 16 is that of a patient with laryngeal tuberculosis and is inserted simply to show the slow response to inoculation and delay in the development of the positive phase.

Chart 17. A case of pulmonary phthisis and tuberculous osteitis of the upper extremity of the tibia; the knee-joint was not involved. This shows typical responses to tuberculin, especially at first; later, when Bier's treatment by passive hyperæmia was tried for the bone lesion, the index became more variable. The chart in one place also exhibits the curve obtained by taking the index immediately before, immediately after, and at various times after the application of the constricting bandage. All pain in the knee has now disappeared and the case is making satisfactory progress.

In a large sanatorium where cases in as early a stage as possible are selected for treatment patients are sometimes admitted presenting indefinite signs and symptoms (*les candidats pour la tuberculose*). In these we have endeavoured by means of estimations of the tuberculo-opsonic index and by employing the ophthalmic test (Calmette) to arrive at a definite diagnosis. Our observations in such cases are given in the charts.

Charts 18, 19, and 20. These patients exhibit indices at a level persistently above what is recognised as the limit of fluctuation in normal persons, and therefore point to a tuberculous infection. On the other hand, they gave no reaction to the ophthalmic test, except the last (Chart 20), and in this case only after the test had been applied for the third time, the test being made at fortnightly intervals.

For comparison we include Charts 21 and 22 in which the opsonic curves closely resemble those of the preceding cases, but these patients had definite though slight pulmonary lesions with tubercle bacilli in the sputum. Both gave a definite reaction to the ophthalmic test. It will be seen that the two methods gave conflicting results in the doubtful cases.

Finally, we would like to add that for some time past we have carried out a series of investigations for the purpose of finding out whether there was any regular parallelism between the agglutinins and opsonins in cases of phthisis. We adopted the technique described by Wright, carrying out the experiment with "throttled" pipettes and requiring an agglutination visible to the naked eye to count as a definite result in any dilution of the serum. We give here two charts (23 and 24) illustrating both the opsonic and agglutination curves, the latter being represented in dotted lines. These apparently show that the two follow a similar course but that the opsonic estimations are more delicate and record much slighter variations.

In conclusion, we desire to express our thanks to the members of the honorary staff for the facilities afforded us in carrying out the investigations.

BLOOD PRESSURE IN NEURASTHENIC STATES AND THE EFFECTS OF CERTAIN FORMS OF TREATMENT THEREON.

BY ERIC D. MACNAMARA, M.D., B.C. CANTAB., M.R.C.P. LOND., M.R.C.S. ENG.,

ASSISTANT PHYSICIAN TO THE WESTMINSTER HOSPITAL; PHYSICIAN TO THE WEST-END HOSPITAL FOR NERVOUS DISEASES.

AMONG the symptoms of neurasthenia are certain referable to abnormality of the vaso-motor system. Palpitations without cardiac lesion or hæmic defect are common and occur on the slightest physical exertion or with a paltry emotional access or with a little digestive disturbance, while præcordial distress or pain is not uncommon and may simulate angina pectoris. Patients often complain of sensations of localised or generalised heat, accompanied by flushing of the face, of the extremities, or indeed of the whole body, and alternating with clammy coldness. Probably allied to these conditions are the attacks of diarrhœa and of profuse micturition which are not infrequent. This particular group of symptoms suggests the possibility of abnormal variations of blood pressure and it is with the existence of these that I am presently concerned, together with the effect of various forms of electrical current and of massage upon them.

I have lately had opportunities of examining a certain number of patients suffering from various diseases of the nervous system before and after they have been subjected to such treatment as it is possible to administer to patients rather fitfully attending the out-patient department of a hospital for nervous disorders. The procedure which I adopted was to estimate the systolic blood pressure by means of a Riva-Rocci sphygmomanometer immediately before the patient received treatment and again immediately after he had received it. The time of day was always the same, that is about 10 A.M., and the estimation was always effected with the patient in the sitting position. Of the patients examined 25 were suffering from functional disease and it is especially to my purpose to inquire into the state of their blood pressure at the beginning of their course of treatment, its state towards the close of treatment, and the effect of each application of the therapeutic agent used, together with the state of the patient's health at the end of his course of treatment. The blood pressure has been compared with the average blood pressure of normal persons of his age as shown in Thayer's table published in the *American Journal of the Medical Sciences*, 1904, p. 291.

In ten of the patients (Table I.) there was at the commencement of treatment a blood pressure which was higher than normal, in nine a blood pressure which was lower than normal, and in six a blood pressure which was normal. In ten patients there was at the end of their course of treatment an alteration in the height of blood pressure, in six the level

being lower than when they commenced treatment, and in four the level being higher. In fifteen patients there was no alteration in the level of the pressure. Here, then, we have evidence, first, that in cases of functional nervous disease of the type of neurasthenia an alteration of the level of blood pressure from the normal was found to be present in the majority of a small series at the commencement of treatment,

TABLE I.

Initials.	State of patient at the close of his treatment.	Comparison of level of blood pressure of patient at commencement of treatment with the level as noted in Thayer's table.	Level of blood pressure at end of treatment compared with its level at commencement of treatment.
1. E.M.	Better.	Higher.	Lower.
2. F.L.	No alteration.	Lower.	Remained low.
3. L.D.	Better.	Normal.	Lower.
4. W.J.H.	,,	Lower.	Remained low.
5. Z.W.	No alteration.	Higher.	Remained high.
6. E.C.	,,	Normal.	Remained normal.
7. A.A.R.	,,	Lower.	Remained low.
8. E.P.	,,	Higher.	Remained high.
9. E.C.	,,	Lower.	Remained low.
10. J.P.	Better.	,,	Raised.
11. W.A.	,,	,,	,,
12. S.L.	No alteration.	Higher.	Remained high.
13. T.T.	Better	Lower.	Raised.
14. E.F.	,,	Higher.	Remained high.
15. M.M.	,,	Lower	Remained low.
16. E.L.	No alteration	Normal	Remained normal.
17. M.A.G.P.	,,	,,	,, ,,
18. C.B.	Better.	Higher.	Lower.
19. R.B.	,,	Normal.	Remained normal.
20. E.G.	,,	Higher	Lower.
21. B.H.	,,	Normal.	Raised.
22. A.L.	,,	Lower.	Remained low
23. A.M.	,,	Higher.	Remained high.
24. A.B.	,,	,,	Lower.
25. H.S.	,,	,,	,,

only six patients out of 25 showing no alteration; and secondly, that some of these patients, who underwent certain sorts of treatment, showed towards the close of treatment a difference of level of blood-pressure from that which existed before treatment commenced.

Certain of these patients gave neuropathic family histories and it is interesting to note the differences in the effect of treatment upon the blood pressures of those with family histories of a faulty character and of those without, as well as the difference in the effect of treatment upon the general condition of individuals of the two classes.

TABLE II.

Initials.	State of patient at the close of his treatment.	Comparison of level of blood pressure of patient at commencement of treatment with the level as noted in Thayer's table.	Level of blood pressure at end of treatment compared with its level at commencement of treatment.
1. E.M.	Better.	Higher.	Lower.
6. E.C.	No alteration.	Normal.	Remained normal.
11. W.A.	Better.	Lower.	Raised.
12. S.L.	No alteration.	Higher.	Remained high.
19. R.B.	Better.	Normal.	Remained normal.
20. E.G.	,,	Higher.	Lower.
21. B.H.	,,	Normal.	Raised.
23. A.M.	,,	Higher.	Lower.
24. A.B.	,,	,,	,,
25. H.S.	,,	,,	,,
13. T.T.	,,	Lower.	Raised.

Table II. indicates the condition of those patients who had no family history of nervous disease towards the close of their course of treatment and also the state of the blood pressure at the beginning of treatment and its state at the end of treatment. In this series before treatment the blood pressures of six patients were above the normal, those of three were normal, and those of two were lower than normal. At the end of their courses of treatment the blood pressures of five patients were lower than before and three were at the same level afterwards as before. Two patients felt no better and the blood pressures of these showed no change. Nine patients felt better, and of these one showed no change of blood pressure, while eight showed a change.

In Table III. is given a list of persons all of whom had a family history of nervous diseases. This table indicates the condition of those patients who had a family history of nervous disease towards the close of their treatment and also the state of the blood pressure at the beginning of treatment and its state at the end of treatment.

TABLE III.

Initials.	State of patient at the close of his treatment.	Comparison of level of blood pressure of patient at commencement of treatment with the level as noted in Thayer's table.	Level of blood pressure at end of treatment compared with its level at commencement of treatment.
2. F.L.	No alteration.	Lower.	Remained lower.
3. L.D.	Better.	Normal	Lower.
4. W.J.H.	,,	Lower.	Remained lower
5. Z.W.	No alteration.	Higher.	Remained higher.
7. A.A.R.	,,	Lower.	Remained lower.
8. E.P.	,,	,,	,, ,,
9. E.C.	,,	,,	,, ,,
10. J.P.	Better.	,,	Raised.
14. E.F.	,,	Higher.	Remained higher.
15. M.M.	,,	Lower.	Remained lower.
16. E.L.	No alteration.	Normal.	Remained normal.
17. M.A.G.P.	,,	,,	,, ,,
18. C.B.	Better.	Higher.	Lower.
22 A.L.	,,	Lower.	Remained lower.

In this series before treatment the blood pressures of eight patients were lower than normal, those of three were normal, and those of three others higher than normal. After treatment there was a rise in one patient, a fall in two patients, and in eleven there was no alteration. Seven patients felt no better, and of these the blood pressures showed no change. Seven patients felt better, and of these the blood pressures of four showed no change, those of two were lower and that of one higher than before treatment.

TABLE IV.

- A. Nine showed no alteration in health.
  - A. These same nine showed no alteration in blood pressure.
- B. Sixteen improved in health.
  - 1. Ten showed altered blood pressure.
    - *a.* In six blood pressure was lowered.
      - Five began with blood pressures higher than normal.
      - One began with a normal blood pressure.
    - *b.* In four blood pressure was raised.
      - Three began with blood pressures lower than normal.
      - One began with a normal blood pressure.
  - 2. Six showed no alteration in blood pressure.
    - Three of these were lower than normal.
    - Two of these were higher than normal.
    - One of these was normal.

A comparison of the last two tables reveals that, at any rate in the cases studied, the proportion of those who got better was larger among those with no faulty family history (nine out of 11) than among those with one (seven out of 14), and further that the number of those whose level of blood pressure was different at the end of their courses of treatment from that which it had been before treatment began, was greater among those without notable family history (eight out of 11) than among those with a family history (three out of 14) of nervous disorder.

My next endeavour is to attempt to ascertain the relationship which may exist between alteration in the level of blood pressure and alteration in the condition of the patient's health. This may be represented in tabular form. (Table IV.)

From a consideration of these figures it appears to me that we may form an expectation that on a patient recovering from neurasthenia there will be some alteration of level of his blood pressure from that which existed during his illness and that if his blood pressure was then high it will probably descend, while if it was low it will probably ascend.

Acting upon the hypothesis, for the support of the truth of which some of the facts ascertained may be called in evidence, that patients suffering from neurasthenia show alterations in blood pressure which tend to disappear as they get better and which tend not to disappear if they do not get better, we must look about for remedial measures such as may produce alterations in blood pressure. Those here taken into consideration consisted in the application of various forms of electricity and of massage. The circumstances of the treatment of the patients and of my examination of their blood pressures were as similar from day to day as it was possible to make them. The time was always between 10 and 11 A.M., the patients always rested after their journey to the hospital before seeing me, and the blood pressure was always taken with the patient in the sitting position immediately before and immediately after treatment.

TABLE V.

Character of treatment.	Number of occasions upon which blood pressure was raised.	Number of occasions upon which blood pressure was lowered.	Number of occasions upon which blood pressure was unaltered.
High frequency ...	30	267	34
Static bath (+ charge)	75	11	6
Sparks	22	22	5
Faradism	7	15	7
Constant current ...	6	10	12
Massage	105	10	17
Vibration	20	9	9

The electrical applications lasted for about seven minutes apiece and the manual and mechanical for about ten minutes at each sitting. (Table V.)

It will be seen from this table that in a very large majority of cases application of high-frequency currents produced a lowering of blood pressure, that in the large majority of cases the static bath (+ charge) and massage produced a raising of blood pressure, that the discharging of a patient charged with static electricity (called in the above table "sparks") resulted as often in a raising of blood pressure as in a lowering, that the application of a faradic current tended rather to lower than to raise the blood pressure, and that the galvanic current cannot be said to have effected much change in either direction. For how long these several changes in the level of the blood pressure last I am unable to say, since to discover that would involve the re-application of the sphygmomanometer from time to time during the rest of the day upon which treatment took place, but I think the gradual alteration of the level during the progress of a case in a direction similar to that of the alteration succeeding each separate application of treatment is at least suggestive of some lasting effect of the agent employed. For instance, there was in the case of L.D. (3) with the lowering of blood pressure upon each application of the high-frequency currents a gradual lowering of the general level as time went on, and a somewhat similar state of things was noted in the cases of E.M. (1), H.S. (25), C.B. (18), and E.C. (6), but unfortunately this is by no means always the case. For example, in the cases of A.B. (24) and E.G. (20), in spite of the rise which occurred after each application of the static charge, a general fall occurred. Similarly in the cases of M.A.G.P. (17), T.T. (13), W.A. (11), and N.U. (26), in which after repeated applications of high frequency, most of which were accompanied by a lowering of blood pressure, the general level tended to rise. So also in treatment by massage, in spite of the rise which occurred in the vast majority of cases after each act of treatment, the trend in the cases of E.C. (9), F.M. (27), and K.B. (28) was neither up nor down, though in the cases of E.G. (20) and E.C. (29) it was upward. Indeed, it would be difficult to institute treatment with any confidence that there would be at its end such alteration as might have been expected from a knowledge of the alteration that followed each application of the therapeutic agent employed. But though there is but little comfort in this conclusion I think we may, from a consideration of some of the cases, have some expectation of a change of level in the blood pressure when that level is abnormal to one that is nearer the normal.

In looking over the charts a point that attracted my attention was the difference of the degree of the variation of the blood pressure before and after treatment at various times during the course of the malady. Sometimes there was as much as from 20 to 30 millimetres of variation and in the same case at another time a variation of as little as 5 millimetres. Out of 28 patients 17 became better, and of these ten showed no difference of variation, four showed less variation, and three an increased variation. 11 patients remained without change in their condition, and of these nine showed no difference of variation, one an increased variation, and one a diminished variation.

The tempting conjecture that patients might when first presenting themselves exhibit a greater or less stability of the pressure-regulating apparatus or indicate that the apparatus was not sufficiently sensitive or too sensitive does not appear to me to be borne out by these figures. Further, though towards the close of treatment certain of the patients showed a less and some a greater variation than they had at its commencement, yet such changes were not markedly in any one direction—that is, that on a patient becoming better it was as likely as not that the variation remained unaltered or if altered might be either in the direction of an increase or of a decrease. It is possible that from a survey of a larger number of cases it might become manifest that we are in fact dealing with three groups, in one of which there is no alteration of the sensibility of the pressure-regulating apparatus, another in which there is diminished sensibility or a diminished power of action or both, and a third in which there is an increased sensibility of the apparatus.

My conclusions may be summarised as follows:—

1. In many cases of neurasthenia there is an alteration of the level of the blood pressure from the normal, the level being sometimes higher and sometimes lower than normal.

2. Patients who show such alterations and who undergo certain sorts of treatment manifest, in some cases, at the end of a course of treatment a level of pressure different from that which existed before treatment began. If the pressure at the commencement be abnormally high it will probably descend, while if it be abnormally low it will probably ascend.

3. The number of patients whose blood pressure is different at the end of their course of treatment from that which it was before treatment began is greater among those without a family history of nervous instability than among those with such a history.

4. In a very large majority of cases the application of high-frequency currents produces a lowering of blood pressure, while the static bath (+ charge) and massage produce a raising of pressure. The discharging of a patient charged with static electricity results as often in a rise as in a fall of blood pressure. The application of the faradic current tends rather to lower than to raise the blood pressure and the galvanic current cannot be said to effect much change in either direction.

5. It is difficult to institute treatment with any confidence that there will be at the end of the course such an alteration as might perhaps have been expected from a knowledge of the alteration that is likely to follow each application of the

therapeutic agent employed, though we may look for a change of level, when the level was at the commencement abnormal, to one that is nearer the normal.

6. There is no evidence that the differences of variation of level before and after treatment which may sometimes be noted can be correlated with improvement in health.

Welbeck-street, W.

A CASE OF OSTEOMALACIA.

BY W. O. MEEK, M.B., B.S. LOND., M.R.C.S. ENG., L.R.C.P. LOND.,

ASSISTANT DIRECTOR, PATHOLOGICAL LABORATORY, ST. THOMAS'S HOSPITAL, ETC.

(From the Pathological Department of St. Thomas's Hospital.)

THE following account is of a case of osteomalacia which died recently in St. Thomas's Hospital. The patient, a female, aged 21 years, unmarried, was admitted to St. Thomas's Hospital on April 23rd, 1907, under the care of Mr. C. S. Wallace. The family history was unimportant. The patient, who came from Wiltshire and had lived only in England, was healthy up to the age of 14 years. At this period she was unable to obtain sufficient food and her general health suffered. At the age of 17 years she was admitted to a hospital in Marlborough with symptoms of exophthalmic goitre—i.e., enlargement of thyroid, exophthalmos, and very rapid pulse. She was very anæmic and thin. She remained in hospital for two months and her condition improved greatly. When discharged she was apparently cured, but the pulse-rate was still somewhat increased. Early in 1905 there was rapid loss of strength, with pain in the legs and difficulty in walking. She was obliged to have crutches and in February, 1906, she was unable to get about at all. At this time, while her mother was lifting her, a fracture of the right femur occurred. She was again admitted to the local hospital. She was found to be extremely emaciated and in a very neglected condition. The fractured bone failed to unite, so an operation was performed, but the bone proved too friable to wire. Phosphorus was administered internally. The general condition improved immensely and she gained weight rapidly, but the condition of the right femur remained unchanged and softening of other long bones was noticed. She still had considerable pain in the limbs. At this time she was admitted to St. Thomas's Hospital. On admission all the long bones were softened and malleable, especially the right femur and left humerus. There was now partial union at the site of fracture. The pelvis was triradiate and the vertebral column showed lateral curvatures. An x ray examination of the long bones showed marked deformities with great diminution in the amount of earthy constituents of the bone. The urine was alkaline and foul, with a heavy deposit of pus. It contained a small quantity of albumin and a slight trace of globulins. No albumoses and no reducing substance were present. Microscopically pus cells and bacilli were found in large numbers.

Examination of the blood gave the following result: Erythrocytes, 5,746,875 per cubic millimetre; hæmoglobin, 80 per cent.; colour index, 0·7; leucocytes, 3520 per cubic millimetre; rouleaux formation, good; fibrin formation, slight; and blood platelets, few. A differential count of leucocytes showed: polymorphonuclear neutrophiles, 70·6 per cent.; eosinophiles, 3·3 per cent.; small lymphocytes, 8·3 per cent.; large lymphocytes, 12·3 per cent.; and large hyaline cells, 5·3 per cent.

The treatment adopted was the internal administration of phosphorus and suprarenal extract, with massage and extension to the affected limbs. The patient's condition gradually improved. The pains diminished and the bones of the extremities became firmer and ceased to bend on manipulation. The state of the urine remained unchanged, and on Sept. 16th there was a rise of temperature, which had hitherto been normal, together with pain in the left loin and enlargement and tenderness of the left kidney. A period of irregular pyrexia followed, the patient became dangerously ill, and she died on Oct. 3rd.

Examination of the blood on Sept. 28th showed a leucocytosis with 88 per cent. of polymorphonuclear neutrophiles, while the number of eosinophiles had dropped to 0·8 per cent. The patient's first menstrual period occurred in February, 1907. From this date till the time of death menstruation was regular and normal.

Necropsy.—At the post-mortem examination (which was performed on Oct. 4th) the body was found to be well nourished and fat was abundant. The right kidney was very small and was converted into a thick-walled sac containing pus and gritty material. The left kidney was enlarged and was the seat of an acute suppurative nephritis. The ureters were dilated, but their mucous membrane, with that of the bladder, was healthy. The spleen was enlarged and softened. The uterus was small and nulliparous. The ovaries were small, soft, and pale. Together they weighed only 2·49 grammes. On section the interior was found to be dark red and the organs were tough. The adrenals were of average size and normal appearance. The thyroid was uniformly and moderately enlarged. It was firm and dense and brownish red on section. The right lobe contained a few small cysts with colloid contents. The thymus was atrophic. The remaining viscera showed no naked-eye changes. One of the mesenteric glands contained a focus of caseous tubercle. Both femora were slightly distorted, more especially the right, which was soft and pliable and showed an improperly united fracture in the middle of the shaft. The remaining long bones showed no obvious deformity and were not pliable. The sternum showed a depression in its upper part. The bone was firm and hard. The bones of the cranial vault were thin and rather elastic. The spinal column was more pliable than normal and showed well-marked lateral curvatures. The pelvis presented a moderate degree of characteristic deformity. The pelvic outlet was not much diminished in size.

The sternum, several vertebræ, both femurs, and some ribs were retained and sawn open. The vertebræ and sternum were normal. Both femora showed an identical condition: the outer layer of compact bone was greatly thinned and inclosed a very abundant soft marrow. The marrow was

FIG. 1.

Lower half of left femur sawn open. The thin shell of compact bone, the deep-red marrow with paler areas, and the areas of cartilage near the epiphyseal line are well shown. Half natural size.

mottled in appearance, areas of red vascular tissue alternating with paler areas of fat. Of these the former were the more abundant. In the substance of the marrow were spicules of bone and in some places small cysts, containing an oily fluid (Fig. 1). These changes were most marked in the diaphysis, the cancellous bone being more plentiful in the epiphyses, though here the bone was softer than normal. In

the neighbourhood of the junctions of epiphysis and diaphysis were islets of cartilage arranged irregularly and loosely imbedded in the marrow and rarefied cancellous tissue. Small spicules of bone picked out from the shaft and mounted in glycerine and examined under a low power of the microscope showed a transparent marginal zone of decalcified bone. The decalcified portions could also be demonstrated by staining in picro-carmine. The ribs showed abundance of vascular marrow. There were thinning of the outer layer of compact bone and some rarefaction of the cancellous osseous tissue, though these changes were less marked than in the femur. The rib cartilage was normal.

Histological examination.—Pieces of various viscera and of the femur marrow were fixed in 10 per cent. salt formalin solution and subsequently imbedded in paraffin. A portion of one suprarenal body was fixed in Orth's fluid and subsequently imbedded in paraffin. Small pieces of bone from the ribs and various portions of the femur were decalcified in nitric acid and phloroglucin and imbedded in paraffin. The staining reagents employed were mainly hæmalum and eosin, and hæmalum and van Gieson and Leishman's stain. Smears were made from the rib and femur marrows and from the splenic pulp and were stained by Leishman's method.

Microscopical appearances: The bones.—The most striking feature of all the sections is the great absorption of bone in the femur and its replacement by a cellular and very vascular marrow. The outer layer of compact bone is reduced to a thin shell and between it and the periosteum is a row of osteoclasts. The cancellous bone in the interior of the shaft is greatly reduced in amount and represented by small trabeculæ undergoing erosion by osteoclasts which lie in depressions in the bone. A further retrograde change visible

FIG. 2

Photomicrograph of transverse section of the right femur. The outer layer of compact bone is reduced to a mere shell. The cancellous bone is represented by a few trabeculæ. There is a large amount of cellular marrow. Leitz objective No. 3; eyepiece No. 2.

in the bone consists in the appearance of fine fissures in the substance of the trabeculæ. This process splits up the ground substance of the bone into fibrils having a hyaline appearance, in the midst of which lie the bone corpuscles. Sections through one of the cartilaginous nodules seen in the vicinity of the epiphyseal line show it to consist of hyaline cartilage surrounded by a zone of imperfectly calcified osseous tissue which is undergoing absorption by osteoclasts. In the midst of the marrow in the centre of the shaft are small spicules of bone which are cut in sections without previous decalcification. Some of these are in process of absorption, as is shown by the presence of osteoclasts lying in lacunæ at their edges. Other spicules are surrounded by closely applied osteoblasts and evidently consist of newly formed bone in which calcification has failed. Evidences of new bone formation, however, are slight in comparison with the marked picture of bone destruction. (Fig. 2.) The changes in the rib resemble those in the femur, but they are not so marked and the amount of bone remaining is greater. The interstices of the bone are filled by a richly cellular and vascular marrow. The line of cartilage cells at the junction of cartilage and bone is regular and even. (Fig. 3.)

FIG. 3.

Photomicrograph of inner end of rib at the junction with the cartilage. Bone absorption by osteoclasts is well seen. The line of cartilage cells is regular and even. Leitz objective No. 3; eyepiece No. 2.

The bone marrow.—The most notable features in all the sections of the bone marrow are its abundance and vascularity. The fatty marrow of the femur is being replaced by a richly cellular tissue which is making its way between the fat cells and separating them more or less widely. This cellular tissue is highly vascular, the blood being contained either in definite capillaries or in irregular spaces among the marrow cells. In some of these blood channels thrombosis is seen and they all contain numerous leucocytes most of these being polymorphonuclear neutrophile cells. The majority of the cells in the marrow are granular and made up chiefly of polymorphonuclear neutrophiles and neutrophilic myelocytes with smaller numbers of eosinophilic cells. The finely granular type of cell is especially numerous in the neighbourhood of the blood spaces. The non-granular cells of the marrow are in a minority but in some parts of the sections aggregations of these cells are met with, such areas contrasting strongly with other areas in which almost every cell is of the granular variety. The non-granular cells seen are of the following kinds: (*a*) Lymphocytes, small and large. (*b*) Cells of varying sizes, mostly larger than a large lymphocyte, with a pale nucleus and a variable amount of cytoplasm. The cytoplasm stains a greyish-blue by Leishman's method. These cells are numerous in the vicinity of some of the small areas of bone which are seen in the sections and from their arrangement a certain proportion appear to be osteoblasts. (*c*) Plasma cells. (*d*) Large hyaline cells with indented nuclei and clear cytoplasm. Multinucleated giant cells are numerous and a few of them are seen to have engulfed smaller cells. The majority of these multinucleated cells are smaller and contain fewer nuclei than the osteoclasts which are met with in the areas of bone absorption. Large mononuclear giant cells are also present but are not numerous. Mast cells are met with in very small numbers. Mitotic figures are plentiful in both granular and non-granular cells. Nucleated red cells, almost entirely normoblasts, are scattered through the marrow.

A differential count of the marrow cells gave the results shown in the accompanying table.

No giant cells were present in the portions of the films counted, but they were seen in other portions where the cells were too closely packed to count. Many of the large mononuclear cells show a few neutrophilic granules in the cytoplasm. The proportion of granular cells in the films is higher than a study of the sections of marrow would suggest. This is no doubt due to the great vascularity of the tissue, much of the films consisting of blood from the

numerous blood channels which, as mentioned above, contain large numbers of polymorphonuclear neutrophiles.

The ovaries.—Sections of the ovaries showed a marked degree of fibrosis. The blood-vessels were extremely numerous and their walls in many cases were thickened. A few corpora lutea with surrounding sclerosis were seen. The Graafian follicles were few in number. Some contained rudimentary ova. No interstitial cells could be seen in sections of the gland.

The thyroid, parathyroid, thymus, and pituitary glands were normal. The suprarenal glands showed no abnormality and contained a normal amount of chromaffin substance. The spleen contained areas of hæmorrhage and pigmentation. A large number of polymorphonuclear neutrophiles were present in the splenic pulp. The left kidney showed a well-marked suppurative nephritis.

The most remarkable feature of the pathological examination is the great increase in the amount of vascular marrow in the long bones, an increase greater than is found in any other condition. Moreover, both macroscopical and microscopical appearances point to this increase being the result

—	Rib marrow.		Femur marrow.	
	Total.	Per cent.	Total.	Per cent.
Transitional polymorphonuclear neutrophiles	42	8·4	25	5·0
Polymorphonuclear neutrophiles	190	38·0	147	29·4
Polymorphonuclear eosins	9	1·8	7	1·4
Neutrophilic myelocytes	87	17·4	76	15·2
Eosinophilic myelocytes	—	—	2	0·4
Small lymphocytes	123	24·6	148	29·6
Large lymphocytes	21	4·2	45	9·0
Large mononuclears	19	3·8	34	6·8
Plasma cells	7	1·4	15	3·0
Mast cells	1	0·2	—	—
Transitional leucocytes	1	0·2	1	0·2
	500	100·0	500	100·0
Normoblasts	14	—	5*	—
Megaloblasts	1	—	—	—

* While counting 500 cells.

of an active proliferative process, the former by the way in which whole tracts of fatty marrow are becoming vascularised, the latter by the way in which the cellular tissue is invading and replacing fat and also by the evidences of cell multiplication.

The cell changes in the marrow are obscured by the effects of acute sepsis which lasted for 14 days and terminated the patient's life. To this can be attributed the great increase, absolute and relative, in the number of granular cells and the thrombosis seen in some of the vessels. Under no conditions, however, can sepsis produce such an increase in amount of the marrow, and acute sepsis will not account for the numerous areas of non-granular cells and giant cells. We must seek an explanation of the marrow changes in a chronic process of some standing, whatever its exact nature may be.

In sections of the bones, while all the processes mentioned in the classical descriptions of this disease can be seen, the general appearance is that of decalcification together with absorption of bone, mainly by osteoclasts, and a replacement of bony tissues by cellular marrow. In the present case this absorption of bone admits of a ready explanation by considering it as secondary to the proliferation and increase of marrow. In pernicious anæmia, some other blood diseases, and in certain marantic conditions where an increase of red marrow is found in the shafts of the long bones, absorption of bone is frequently seen, though not nearly to so marked a degree as in osteomalacia, nor is softening of bone found in these conditions.

The descriptions by different authors of the bony changes in this disease vary considerably. Von Recklinghausen[1] lays stress on the part played by fissuring and fibrillation of the bony trabeculæ in their removal, while Meslay[2] describes their removal and replacement by the giant cells of the marrow. Similarly widely varying conditions have been found in the marrow in osteomalacia. These accounts, however, were published before the introduction of the newer blood stains and modern technique.

Many authors, writing from a clinical or pathological standpoint, have attached great importance to the condition of the ovaries. Increased vascularity with various degenerative processes in the walls of the small blood-vessels have been found on numerous occasions. In the present case the vessel walls are thickened and fibrotic but no hyaline or amyloid change can be detected. In sections of other organs from this case the vessel walls are normal, so it seems unlikely that the suprarenal extract, which was administered for five months, can have been the cause of this fibrosis. Of great interest is the absence of interstitial cells from sections of the ovaries.

The condition of the bones in this case showed a marked improvement during the last few months of the patient's life, an improvement commencing just prior to her admission to St. Thomas's Hospital and being steadily maintained. This may have been due either to the establishment of menstruation, which took place about this time, or to the effect of the suprarenal extract. Several cases of improvement under adrenalin have been recorded.[3] Here the suprarenal glands are, so far as can be histologically shown, normal and active. Of interest also is the patient's previous history of Graves's disease. Pommer[4] has recorded a similar sequence of events. The rapid recovery from symptoms and the negative post-mortem findings throw doubt on the diagnosis of Graves's disease in the present case.

In conclusion, I wish to thank Mr. S. G. Shattock and Mr. L. S. Dudgeon for kind help and advice and Mr. Wallace for permission to make use of the clinical account of the case.

St. Thomas's Hospital, S.E.

[1] Von Recklinghausen: Festschrift der Assis. für Virchow, Berlin, 1891.

[2] Meslay: Thèse de Paris, 1896.

[3] Tanturri: Zentralblatt für Gynäkologie, 1907, No. 34. See also Journal of Obstetrics and Gynæcology, May and December, 1907.

[4] Quoted by von Recklinghausen.

A CASE OF
DIPHTHERITIC PARALYSIS TREATED BY INJECTIONS OF THE ANTI-DIPHTHERITIC SERUM OF ROUX.

BY G. S. MIDDLETON, M.A. ABERD., M.D. GLASG., F.F.P.S. GLASG.,

PHYSICIAN TO THE ROYAL INFIRMARY AND TO THE ROYAL HOSPITAL FOR SICK CHILDREN, GLASGOW.

DIPHTHERITIC paralysis is a familiar condition and one in which the prognosis seems to depend on whether the cardiac nerves become affected or not. Cases which do not die from syncope generally recover, but the process of recovery may extend over a long period. The treatment commonly recommended is absolute rest, electricity, and strychnine, but it sometimes seems, from the months that have to be spent in bed, that, after all, it is time and the *vis medicatrix naturæ* that work the cure and not the remedies employed.

In 1906 my attention was drawn to a method of treatment advocated by Dr. J. Comby of Paris in an article in the *Archives de Médecine des Enfants* for August, 1906, entitled "Trois Nouveaux Cas de Paralysie Diphtérique guéris par le Sérum de Roux." In this communication Dr. Comby not only records three new cases of his own but refers to several reported by others since his original paper appeared in 1904. The results were so remarkable that I determined to give the serum treatment a trial in a case that came under my care in December, 1906. As it was Roux's serum that Dr. Comby used a supply of that was obtained from Paris.

A man, 31 years of age, was admitted to the Royal Infirmary, Glasgow, on Dec. 16th, 1906, suffering from paralysis. 11 weeks prior to admission he had an attack of diphtheria, for which he was kept in bed for four weeks. He was not treated with anti-diphtheritic serum. After a week in the country he resumed his work but had to

desist at the end of another week owing to paresis of the limbs, which had been preceded by vague pains and numbness in the hands and feet. The paralysis affected not only the arms and the legs but also the powers of speech and of swallowing. When he took to bed he could stand and walk, but the paralysis gradually became so complete that within a fortnight he could not stand. He had had no ocular or facial paralysis and no breathlessness or palpitation.

On admission he had recovered the powers of articulation and of swallowing, but the paralysis of the limbs was very marked. On both sides there were wrist drop and complete absence of gripping power, but there was just sufficient power in the extensors to raise the hand slowly so as to be in line with the forearm. Neither arm could be raised from the side. The feet and legs were in much the same condition; he could perform movements at all the joints but these movements could be prevented by slight pressure with a single finger. There was complete absence of knee-jerks and of plantar reflexes, and there was no ankle clonus; the cremasteric reflex was normal. Coördination was defective in both hands and feet. He could not raise himself in bed without assistance. The affected muscles were flabby and wasted. The pulse, 80, was regular in force and in rhythm but of somewhat low tension. The temperature was normal, as was also the urine.

The patient was kept at rest in bed and in a few days treatment by the faradic current was commenced and was continued up to Jan. 16th, 1907. At that date his condition was worse than on admission, for he had practically no power of movement at the wrists and ankles, and the movements at the knees and hips were weaker than they had been. The paralysis had now been present for nine weeks.

Having obtained a supply of Roux's serum all other treatment was discontinued and 20 cubic centimetres of the serum were injected on the evening of Jan. 16th. Nightly from the 17th to the 23rd, and, finally, on the 25th, 10 cubic centimetres were injected—i.e., in all 100 cubic centimetres. On Jan. 17th already a faint increase in power was observed; on the 18th it was quite definite, for he could flex and extend the right wrist and had also a little power of movement at the left, and he could raise his arms somewhat, while it required the pressure of both forefingers to prevent him from bending his knee. The improvement was greater in the right side than on the left. On the 20th he could hold a piece of bread in his right hand and convey it to his mouth, but he could not do so with the left hand. On the 21st the improvement was more marked; though the grasp of the right hand was still feeble he could pick up small objects with the thumb and forefinger and he could perform movements at the wrist-joint with some freedom. He could turn in bed without assistance and when assisted to the sitting posture he could maintain himself there without support. The movements at the ankle-joints were stronger.

It is needless to give the further details as noted in the ward journal. Suffice it to say that the improvement was progressive. On Jan. 29th the patient was able to feed himself and to stand without assistance. By Feb. 7th he was able to be up at table for his meals and to walk about the ward with the aid of a stick. On March 6th he was dismissed practically well but without knee-jerks.

The injections did not cause the patient any inconvenience unless they caused an urticarious rash which appeared on Jan. 27th on the limbs and trunks and lasted for a couple of days, and was slightly itchy on the hands. Coincident with the rash was some puffiness of the eyelids and about the ankles, but there was no albumin in the urine. Occasionally he had pains in the calves of the legs and in the thighs of a neuritic character, but they did not trouble him much and had disappeared long before he left hospital. At no time had he any rise of temperature.

The improvement that followed on the injections was so rapid in its occurrence and so marked that I could not but attribute it to the remedy, though the objection might be raised that it may have been just when spontaneous improvement was about to begin that the injections were commenced. I was, however, so impressed by the result in this case that I shall certainly have recourse to the same treatment in the next case that comes under my care. I shall, however, give a trial to the antidiphtheritic serum in common use, as it may be expected to act in the same way as that of Roux, which is not so readily obtained.

Glasgow.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF TUBERCULOSIS OF THE MESENTERIC GLANDS, WITH ULCERATION INTO THE SUPERIOR MESENTERIC ARTERY.

BY A. W. T. WHITWORTH, M.B., CH.B. VICT.,
HOUSE SURGEON TO THE GUEST HOSPITAL, DUDLEY.

THE patient, a child, aged seven years, was admitted to the Guest Hospital, Dudley, on March 29th. The parents stated that he had complained for some time of occasional pain in the abdomen of a colicky nature. The boy was delicate-looking, of marked tuberculous type, and an imbecile. The eyes were protruding and staring and the face was rather flushed. He lay quietly on his back, with the knees not drawn up, and would make no answer to questions. There was an offensive discharge from the right ear. The temperature was normal and the pulse was 76. The cardiac and respiratory systems were normal. As to the nervous system, there was no paralysis or anæsthesia, the knee-jerks were slightly exaggerated, Babinski's sign was not present, and the bladder and rectum were normal. There was no localised tenderness of the skull. The genito-urinary system was normal. The abdomen was not distended and moved on respiration. The abdominal walls were held rigid on palpation, which, however, did not apparently cause pain. A sense of increased resistance was present in the left lumbar and the left hypochondriac regions. There were no signs of free fluid in the abdominal cavity and the liver was not enlarged. There was slight dulness in the left lumbar region. No vomiting occurred. A diagnosis of localised tuberculous peritonitis was made with (?) temporo-sphenoidal abscess.

The patient's general condition improved under constitutional treatment and the local application of Scott's dressing. He took his food better, never had any vomiting, and his temperature never rose above 99° F. He occasionally cried out with pain in the abdomen, which was always relieved by hot fomentations. There was never any diarrhœa; in fact, the bowels were rather constipated, but on one occasion only he passed a small quantity of bright red blood per rectum. During the attacks of pain the pulse-rate was slightly increased (maximum 96), but the temperature was not raised. There was never any marked pallor or restlessness, his colour steadily improving whilst under treatment. On the morning of April 2nd the patient was suddenly seized with violent pain in the abdomen and he became rapidly collapsed, with subnormal temperature, sighing respirations, pulse small, rapid, and running, face very pale, pupils dilated and not reacting to light, and when I saw him he was obviously dying. Five minutes later the head became retracted and the back arched, and a position of extreme opisthotonos was assumed. This was maintained for about half a minute, when he slowly relaxed and died. No clonic spasms occurred. During the relaxation immediately preceding death it was possible to feel adherent coils of bowel in the left lumbar region.

At the post-mortem examination, on opening the abdomen a considerable quantity of clear fluid escaped and a large amount of blood clot was found in the general peritoneal cavity, most of which was recent, but a small quantity of old clot was also present. In the left lumbar region the intestines were found to be matted together by recent adhesions from a localised plastic peritonitis. On separating these and turning out the blood clot it was found that the mesenteric glands were enlarged, some being hard and caseous, while others were breaking down. Round one of these latter the ulcerative process had transgressed the limit of the gland, had spread on to the adjoining mesentery, and had eroded a large branch of the superior mesenteric artery, the hæmorrhage from which had evidently caused death. All the other abdominal organs were normal and the

bowel itself showed no sign of tuberculous ulceration, the only observable lesion being the adhesive peritonitis before mentioned. The brain on examination proved to be quite normal, except that the convolutions were poorly developed; there was no sign of any cerebral abscess.

The interesting features of this case were the remarkable paucity of symptoms pointing to the precise nature of the pathological condition and the unusual ultimate ending of the case. The fact of the boy being an imbecile precluded the possibility of obtaining any subjective symptoms and materially added to the difficulty of diagnosis.

I am publishing the notes of this case by kind permission of Dr. H. C. Brown, under whose care the patient was placed.

Dudley.

NOTE ON A CASE OF ACUTE PULMONARY ŒDEMA.

BY CHARLES E. DENNING, L.R.C.P. & S. IREL., L.M.

THE following report of a case which came under my care will no doubt be of interest to readers of THE LANCET.

A married woman, aged 39 years, who had been under medical treatment for "heart disease and occasional cough," was advised in view of her approaching confinement in July to go to the country for a change. On April 5th she came to a farmhouse in this neighbourhood and her health improved somewhat. But she still suffered from "shortness of breath." On April 26th she was in her usual health and walked in the afternoon and after supper went to bed. Almost at once she began to cough and at 1.30 A.M. I was called up to see her, the message being, "a woman has been coughing for three hours without ceasing and cannot stop." I saw her within half an hour and found her sitting up in bed in very great distress, breathing 48 times a minute, about every third gasp being a barking cough. It was not at all like the rapid breathing of acute pneumonia or pleural effusion, but the woman was struggling for breath and in fear of suffocation. Her friends had tried to give her brandy, but she said that she had not time to swallow anything. Up to this time, three and a half hours from the commencement of the attack, there had been no expectoration.

On examination I found moist râles all over the lungs back and front, but owing to the noisy breathing and cough I could not distinguish the heart sounds. The pulse was 120. I had just finished my examination when the patient coughed up two mouthfuls of rose-pink froth and continued doing so at short intervals up to the time of her death at 6 A.M. Sometimes the froth gushed out of the mouth and nostrils and at others she coughed it up with a little pink-tinted serum, the total quantity collected in a basin amounting to four ounces. This fluid on settling was of a red colour covered with foam, exactly like beer froth. I was much exercised in my mind how to account for this sudden and alarming illness until I saw the rose-tinted froth issuing from the mouth, when it at once occurred to me that here was a case of acute pulmonary œdema such as those recently reported in THE LANCET, Dr. Leonard Williams first writing on the subject on Dec. 7th, 1907.[1] I injected strychnine and atropine, and later strychnine and digitalin, without appreciable advantage; and I also introduced an exploring needle into the pleura to make quite certain there was no pleural effusion and found there was none. The patient complained of suffocation and became gradually more cyanosed and died at 6 A.M.—i.e., eight and a half hours from the commencement of the attack.

I was only allowed to make a partial necropsy and did so nine hours after death. There were several pleural adhesions but no trace of tubercle. There was about one pint of blood-stained serum in the pleural cavities. Both lungs were absolutely waterlogged—in fact, they presented the appearance of a person who had died from drowning. On section, reddish serum and froth flowed away in large quantities. The heart presented no abnormal features excepting that the mitral valves were much thickened, one valve especially had a distinct patch of atheroma, and there was marked incompetence.

Epping, Essex.

[1] Leonard Williams: Acute Pulmonary Œdema, THE LANCET, Dec. 7th, 1907, p. 1606.

A CASE OF HÆMOPHILIA IN THE NEWLY BORN.[1]

BY F. G. M. BRITTIN, M.R.C.S., L.S.A.

Mrs. ——, aged 37 years, is a large-framed and very anæmic woman. She has had five confinements, each requiring forceps and chloroform, and in each severe post-partum hæmorrhage has occurred. On April 16th I was called to see her and found that she had been in labour several hours. The os was fully dilated, the head was presenting, the membranes were unruptured, and there was no caput succedaneum. I found the lumbo-sacral promontory very prominent and evidently obstructing labour. Under chloroform I turned and brought down the child's right foot and delivered the child in five minutes without the slightest trouble. There was no undue traction necessary. On the 17th I was asked to cut the child's frænum linguæ. It was very short, so I peeled it back with my finger to satisfy the mother. On the 18th I visited the case and found that persistent oozing from the frænum had occurred since I peeled it back. The whole of the frontal region was black, distended, and fluctuating. This swelling extended backwards over the skull and downwards behind the ears, which were pushed out. The skin as far as the clavicles was black. The right shoulder and arm were darkly ecchymosed and the right foot and leg were also darkly coloured. On the 19th the eyelids were black and the breathing was stertorous. The child died at 5 P.M.

In 43 years' general practice I have never seen a similar case and can only conclude that the extraordinary subcutaneous hæmorrhage was due to some hæmophilic tendency in the infant.

Papanui, New Zealand.

A CASE OF ASCITES IN THE NEWLY BORN.

BY H. M. INGLIS, M.B., C.M. EDIN.,
HONORARY PHYSICIAN, CHRISTCHURCH HOSPITAL.

I ATTENDED Mrs. —— in her second confinement recently. Labour was normal, but there was a slight difficulty in delivering the body of the child. I found the child's abdomen very much distended, being so tense that I could not palpate any of the abdominal organs. About 12 hours after birth the child passed a large quantity of urine, the abdominal tension becoming much less pronounced, the walls being slack enough to allow me to feel the organs. The heart sounds were normal. Death occurred 36 hours after birth. On post-mortem examination I found a considerable quantity of bile-stained fluid in the peritoneal cavity. The omentum was so thin that I could not define it accurately. The intestines appeared to be covered with blisters, the largest being of the size of a walnut. As far as I could judge these blisters were little sacs of fluid on the under surface of a thinned-out omentum. All the organs were apparently normal. I attended this child's mother in her first confinement when the child died shortly after birth with a considerably enlarged liver.

Christchurch, New Zealand.

[1] We are indebted to Dr. P. Clennell Fenwick, of Christchurch, New Zealand, for communicating two interesting cases reported by medical men in New Zealand.—ED. L.

TRIENNIAL DINNER OF THE EPSOMIAN CLUB.—The triennial dinner of the Epsomian Club was held at Epsom on July 7th when the members were entertained by the Council of the College and the headmaster. 35 members dined. Speeches were made by the Rev. T. M. H. Smith Pearse, Dr. G. R. F. Stilwell of Beckenham, Mr. L. L. C. Reynolds, and Mr. A. J. Newsom who was presented with a small token of the esteem in which he was held during the many years in which he had commanded the Rifle Corps. Amongst the old Epsomians present were Mr. Clement Smiles, Mr. G. S. Boulger, Mr. Sydney Stephenson, Dr. H. Campbell Thomson, Mr. Edred M. Corner, and Captain T. G. Mair. It was a beautiful afternoon and the College was playing the Surrey Club and Ground at cricket. Those present were much impressed with the immense amount that was being done for the benefit of the buildings and the boys, and the general progress since the majority of the club had left.

Medical Societies.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Osteitis Deformans.—A Rare Type of So-called "Fainting Attack."—Intermittent Claudication (Angina Cruris).—Public Medicine from the Sociological Standpoint.

A MEETING of this society was held on July 1st, Dr. JAMES RITCHIE, the President, being in the chair.

Dr. BYROM BRAMWELL demonstrated a case of Paget's Disease (Osteitis Deformans). It occurred in a strong, healthy man when of the age of 37 years, or five years ago. At that time he fell and broke his left thigh and left humerus. Two months later he again fell and fractured his left humerus, the right clavicle, and the right scapula; five weeks later the left arm again gave way. Subsequently both forearms were fractured as well as several other bones. Formerly he was 5 feet 6½ inches in height, but now he is only 4 feet 11 inches tall; his head has become larger and his bones generally show marked changes. The clavicles project forwards and the long bones are curved; the chest is broadened out. The urine contains pus and albumin as well as phosphates. The hair all over the body has increased in amount; the ends of the fingers and thumbs are enlarged and flattened, not due to bony thickening but to an increase in the soft parts; the osseous phalanges have to a great extent lost their calcareous matter. On admission the red blood cells were 6,700,000 and hæmoglobin 105 per cent. His general health is good and there is no pain or tenderness of the bones. The administration of adrenalin chloride has caused marked improvement, the fever having gone and the blood having regained its normal characters.

Dr. HAMILTON G. LANGWILL read a note on a Rare Type of So-called "Fainting Attack." The nature of the attack was best indicated by describing two cases, both women. In each the seizure was most liable to occur on getting into bed, when a "sinking sensation" in the umbilical region came on, without, however, the slightest feeling of swooning, consciousness being intensely alert throughout the attack though the power of utterance was gone, the overpowering sensation being the sense of impending death unaccompanied by any pain, dyspnœa, or any motor phenomena, such as twitchings, &c. The pulse was very small and compressible and the hæmomanomter showed (especially in one case) a low pressure between the attacks. Case 1 has shown for years, as a minor form of vaso-motor disturbance, a marked tendency to a sinking feeling in the abdomen constantly following upon evacuation of the bowels so severe as to compel her to lie down thereafter; while in Case 2 for years prickling and numbness in her limbs on getting into bed have been so severe that she could never get to sleep without first getting into the "knee-elbow" attitude tightly so as to benefit by the flushing of her blood-vessels on relaxing the forced flexion of her limbs. The view held is that in these patients there is a liability to a rapid withdrawal of a large amount of blood into the splanchnic venous pool consequent upon sudden dilatation of the arterioles in this region. The treatment based upon this view—viz., firm pressure by an abdominal binder with pad over the splanchnic area to be regularly applied at night on removing the (tighter) daytime garments—has had the result of entirely preventing any further such attacks. Interesting corroborative evidence as to the correctness of the theory is shown by Case 2 who remarked that so long as she wore her binder after her last confinement she had noticed that she never had either one of her severe attacks or even required to assume the "knee-elbow" position till she left off the binder. The attacks are compared with those recently described by Sir William Gowers as "vaso-vagal" attacks, from which, however, they seem to differ considerably in character as also in the suggested origin, Sir William Gowers regarding arterial spasm as an important element calling for vaso-dilators, while Dr. Langwill is of opinion that the seizures described above arise from sudden dilatation of the splanchnic arterioles in persons with (probably) general low vaso-motor tone.—Dr. J. O. AFFLECK said that many cases which were thought to be due to cardiac affections were in reality epileptic in character and thus escaped recognition, but Dr. Langwill's cases seemed to exclude these conditions.—The PRESIDENT said that as there was no loss of consciousness, as happened in anæmia of the brain, there must have been in the cases described a partial anæmia such as might arise from defective blood pressure.—Dr. BYROM BRAMWELL, Dr. ALEXANDER JAMES, and Mr. DAVID WALLACE took part in the discussion.

Dr. BYROM BRAMWELL read a paper on Intermittent Claudication or Intermittent Limping (Angina Cruris) and Obliterative Endarteritis, which was illustrated by lantern slides. We hope to publish an abstract of this paper shortly.

Dr. JAMES read a paper entitled "Public Medicine from the Sociological Standpoint." He said that it was the function of the medical man to seek to interpret the meanings of the multitudinous and complex processes which together worked towards the growth and development of individual living beings. At no time probably in history had the importance of the information which the medical man could give to society been more appreciated than at present. In civil life the importance attached by the community to the medical man's advice and guidance was now all-pervading. Whilst formerly the medical man was present and all-powerful in the sick-room and in the hospital he was now present and active in the school, the workshop, the factory, and the mine. Instead of, as formerly, attending to the suffering he now worked amongst men and women in health and vigour, so as to insure that no evil conditions were present which might cause that health and vigour to be impaired. Instead of, as formerly, being employed by the individual he was now to a large extent employed by, and recompensed by, the community. Whilst formerly the medical man could regard himself as the welcomed guide, now with compulsory notification and isolation, with medical inspection in schools, and with compulsory birth notification, his appearance was not always welcomed and he felt himself regarded as was the official, the detective, and the jailer. Some of these modern developments could only be a matter for sincere regret to the medical man. The question which Dr. James wished to lay before the society was, Was it the case that those modern developments in connexion with what was really public medicine, were working for the public good? The view that with efficient notification and isolation the community could through its public health officials stamp out all the so-called specific diseases held a very high place, and for the last 20 or 25 years more or less thorough efforts in this direction had been put into practice. It had been recognised that the assumption by communities of individual responsibilities had other disadvantages. Apart from the fact that it struck a blow at family life it had the effect of lessening that feeling of responsibility in the individual which begot providence and frugality. It might be answered that whatever led to the health and welfare of the community would more than counter-balance any disadvantage to the individual. Dr. James said that he would simply confine his attention to the question as to whether that interference of the community with the liberties and responsibilities of the individual which public medicine had brought into existence within the last quarter of a century had really been doing good. He drew attention to certain curves showing the mortality from phthisis per 10,000 of the population between the years 1860 and 1905 in Aberdeen, Dundee, and Edinburgh. Here there had been only progressive voluntary efforts in individuals to improve the general conditions of life and the results were as satisfactory as they were distinct. Another set of curves related to typhoid fever during the same period and in the same towns. The enforcements of legislative enactments did not appear to have improved matters as regards this disease. As regards measles, the curves showed that since notification and isolation the mortality had all over increased rather than diminished. As regards diphtheria, the curves showed in all the towns improvement, but not specially after compulsory isolation, and the improvement was not more marked than was seen in phthisis without isolation. As regards scarlet fever, the curve showed, since isolation, a distinct improvement, but he believed that this was not *propter* but *post hoc*. Dr. James referred to an article by Dr. C. Killick Millard on the Influence of Hospital Isolation in Scarlet Fever. In this he had shown that all over the country and for the 30

years 1870 to 1900 the mortality from scarlet fever had been greatly and progressively diminishing and that this diminution had been as marked in those towns with no isolation as with those which had isolation treatment for 70, 80, or 90 per cent. of the cases. Dr. Millard's conclusions were that hospital isolation of scarlet fever in towns appeared to have failed to reduce materially the prevalence of the disease as well as its fatality and that the fatality of the disease had fallen most in those large towns which had not practised hospital isolation. Dr. James said that what might be called natural isolation was hardly a condition to be wished for by the community. Every town medical man knew that the severest cases amongst the exanthemata usually occurred in the country-bred who had just come into town. He referred to "hospitalism," or the risk to the individual from residence in a fever hospital ward, and stated that a great many statistics had been collected to show that the mortality from scarlet fever in isolation hospitals was greater than in scarlet fever treated at home. In tabulating these, however, it had to be remembered that hospital cases were certainly almost always from heredity and surroundings more severe than home-treated ones. From his own statistics it was seen that out of 930 cases of scarlet fever over six years of age 13 were fatal, and of these latter three were cases of cross infection which had occurred in the wards. Of nine acknowledged cases of cross infection of scarlet fever which had occurred in the wards three were fatal. These showed that patients suffering from other diseases ran extra risk if exposed to scarlet fever infection and he further thought that for relapses, sequelæ, and complications of scarlet fever, "hospitalism" might reasonably be blamed. [Adults and children living at home might be dwelling in what were called insanitary conditions and amongst all sorts and conditions of organisms and yet might be safer than when in hospital. This was because when at home they were living amongst organisms to which they had become adapted and to which they were to a certain extent immune. In a fever hospital, however, they met all sorts of organisms and blends of organisms to which they were not accustomed and they therefore suffered. Dr. James held emphatically that medical men had for years taken up an unscientific and decidedly unphilosophical view of organisms in general. They had regarded them as having been specially created to be a source of trouble and death to man. Nothing was further from the truth. A disease organism was simply a normal organism out of its place or soil. What was true of the pneumococcus in pneumonia or the bacillus coli in peritonitis was true of all organisms. Because of this, personal infection, though real and important enough, had had given to it a prominence far above its deserts. Dr. James stated that scarlet fever was capable of spreading by other channels than that of personal infection and quoted Dr. J. C. McVail who stated that outbreaks of diphtheria might be due to dirt, manure heaps, and drains. To those who, like himself, had seen small-pox, as well as scarlet fever, measles, diphtheria, and typhoid fever all treated at home with no harm to anyone, it required some self-control to leave the infection and isolation bogey alone. His object was to show that the strict isolation measures of the past 15 or 20 years stood condemned on their own showing and that distinct modifications were now required. No one had a higher opinion of the value of public health work and isolation hospitals than he had, but the functions which in many cases they had been performing were not what were in their own interest, in] the interest of the community, or in the interests of the profession. He thought that the experienced general practitioner should now make himself heard as practitioners had too modestly stood aside while legislative efforts of which they could not approve had been carried forward.—Dr. J. CRAWFURD DUNLOP said that the result of an examination of Dr. James's figures was remarkable and it seemed undoubtedly true that there was an increased death-rate from scarlet fever in hospitals as compared with cases treated at home.—Dr. BYROM BRAMWELL said that scarlet fever was a very different disease in 1869 to what it was now. He was perfectly satisfied that the virulence of this disease had greatly diminished and that this was probably due to improved sanitation. He could not for a moment agree that isolation hospitals were unnecessary, the only argument against them being the risk of cross infection. He believed that such hospitals, however, diminished the mortality from infectious disease.—Dr. CLAUDE B. KER said that a great argument in favour of isolation hospitals was provided by the Leicester epidemic of small-pox. In this unvaccinated community strict isolation of small-pox patients in hospitals had put a stop to the epidemic. He had been expecting an epidemic of scarlet fever for several years in Edinburgh but this had been prevented by the immediate removal to, and isolation in hospital of the early cases. Wards resembled schools and new infections might easily be brought into the former by new patients. Many patients were admitted to isolation hospitals with two diseases, one apparent and one latent—e.g., diphtheria and scarlet fever. As regards the mortality in fever hospitals it had to be remembered that the patients were drawn mainly from the slums and were only too often the subjects of syphilitic or tuberculous disease. It was not fair to compare the mortality amongst those with that of well-to-do patients treated with every comfort at home.—Dr. W. MORRISON MILNE, Dr. J. D. WEBSTER, Dr. G. MATHESON CULLEN, and the PRESIDENT took part in the discussion.—In reply Dr. JAMES said that if the public had known 20 years ago what the results of compulsory notification and isolation would have been now they would not have allowed the Act of 1889 to pass. Isolation hospitals took in crowds of patients for whom they never were intended and thus the risks of cross infection were greatly increased.

EDINBURGH OBSTETRICAL SOCIETY.—A meeting of this society was held on July 8th, Professor W. Stephenson, the President, being in the chair.—Dr. N. T. Brewis read notes on a case of Hypospadias. A woman, aged 24 years, consulted him for determination of sex. She had been married two years but had been deserted by her husband shortly after. She was dressed as a woman with her hair in a small coil. She had no mammary formation; the chest and pelvis were of a male type. The voice was low set but thin and of feminine quality. On examination of the genital organs, what seemed to be a long clitoris was evident, of about the thickness of a pencil; the corpora cavernosa were easily palpable. The urethra opened at the root of the apparent clitoris; there was no vagina. Testicles were found on either side in a split scrotum. Per rectum no evidence could be found of uterus, ovaries, or prostate. The case was one of male hypospadias. The patient donned male attire.—Dr. F. W. N. Haultain read a paper on Pregnancy complicated with Fibromyoma—a record of ten cases treated by laparotomy. Out of 290 cases of uterine fibromyomata upon which he had performed hysterectomy before the climacteric, 111 were unmarried and 179 married; of the latter 82 had no children and 97 had among them 222 children. 31 of these had only one child each and the largest family of any was six. But the most outstanding feature was relative sterility, the youngest child averaging seven years in those who were not widows; the age of the mothers averaged 41 years. It would thus appear that women the victims of small fibroids frequently became pregnant. This acted materially on the tumours in most cases by permanently increasing their growth, so that they tended to prevent future pregnancy with a resulting relative sterility. As was well known, fibroids of pathological import from their site or size were occasionally associated with pregnancy, but the complication was much less frequent than was supposed. The case-books of the Edinburgh Maternity showed only five cases in 4000 as complicating labour or pregnancy. The mere presence of a fibromyoma in the wall of a pregnant uterus could not be considered a serious complication; but if its size or site in the unimpregnated uterus gave rise to symptoms sufficient for the woman to seek advice, then the coincidence of pregnancy was undesirable, as it formed a very grave complication. Fortunately, pregnancy rarely occurred in these conditions. The dangers were pressure from their position or size, degenerations during pregnancy or after labour, interference with pregnancy or labour, hæmorrhage during or after expulsion of uterine contents, secondary post-partum hæmorrhage, and readiness to serious septic infection after imperfect expulsion of the ovum. The first case was in a primipara, aged 35 years, three months pregnant, who had a large fibroid reaching to the umbilicus. Owing to severe pain and exhaustion an operation was necessary, at which the removal of the tumour was attempted but found impossible, so supravaginal hysterectomy was performed. The

second case was in a woman, aged 35 years, with six months' amenorrhœa, with retention of urine and swelling of the legs. A fibroid incarcerated in the pelvis was discovered, which on laparotomy was found to have a small attachment to the uterus and was thus easily removed. The pregnancy continued to full time. The patient in Case 3 was six months pregnant and suffered from severe pain and hæmorrhage, with rapid increase of the abdominal swelling. Panhysterectomy was performed; the uterus and tumour weighed 18 pounds. The fourth patient was in labour when seen. The cervix was beyond reach of the finger, the pelvis being filled by a large solid tumour. Cæsarean section was performed and subsequently panhysterectomy. The enucleation of the fibroid, which proved to be a cervical one, was attended with very severe bleeding; the woman died from exhaustion on the following day. The patient in the fifth case had been seen for fibromyomata before pregnancy and had been recommended removal but as she refused this curetting was performed. She had become pregnant and at the eighth month had 36 hours of intense pain without any dilatation of the cervix. A second bout of severe pain occurred a month later lasting 24 hours, but with no difference in the conditions. When seen afterwards by Dr. Haultain he found an abdominal tumour reaching five inches above the umbilicus and hard nodules in the cervix. He performed laparotomy 362 days after the cessation of the menses and found a pregnant uterus with cervical fibroids; the liquor amnii was almost entirely absorbed. Supravaginal hysterectomy was the operation. She made a good recovery. The patient in the sixth case was four and a half months pregnant with great pain over the abdomen and much fever; there was a large multinodular tumour in the abdomen. Laparotomy showed a pregnant uterus with multiple fibroids, one of which was necrobiotic. The seventh case was three months pregnant with symptoms of pressure on the bladder and veins from the tumour. Supravaginal hysterectomy was performed. The patient in Case 8 was three months pregnant and suddenly developed an elevation of temperature, and after pains expelled a small decidual mass. The high temperature continued and on the seventh day signs of peritonitis supervened. On laparotomy being performed a quantity of pus was found in the abdomen and oozing from a nodule in the uterine wall. The uterus was removed and found to be the seat of two suppurating fibroids. The patient died 12 hours after. The patient in the ninth case after three months' amenorrhœa aborted and the uterus had to be plugged to stop severe bleeding. In a few days her temperature rose and continued high for four weeks. When Dr. Haultain saw her she had severe abdominal pain, and on performing laparotomy he found a suppurating fibroid nodule in the uterus surrounded by collections of pus but shut off from the general peritoneal cavity. The pelvis was cleared out and drained with a successful result. The patient in the last case had aborted at the fourth month and the secundines had to be removed by curetting. She developed feverish symptoms with offensive discharge. As her condition became grave, with signs of peritonitis, panhysterectomy was performed and the peritoneum was irrigated and drained with a successful result. The uterus showed numerous fibroids, one of which was sloughing and discharging into the uterine cavity. This series of cases showed the frequency with which these tumours became infected post partum and this complication was the gravest feature of their coincidence with pregnancy. Dr. Haultain had seen other two similar cases unoperated upon prove fatal. This liability to infection was readily explained when the great increase of these growths is remembered, and their great vascularity during pregnancy. After expulsion of the ovum the involuting uterus by its strong retraction seriously interfered with their circulation; so much so that necrosis and sloughing might occur. The diagnosis of this complication with pregnancy was simple in the majority of cases. The prognosis was very different according to different opinions; the divergence of opinion seemed to be more apparent than real, the crux of the situation not being defined—viz., pregnancy and fibroids generally, as against pregnancy with fibroids whose size and site gave rise to symptoms. In the latter their coincidence was rare but undoubtedly grave. The treatment of cases of pregnancy complicated by fibroids must vary necessarily with each case. Generally it should be primarily expectant; in every instance, as many had observed that most unlikely cases had a good termination. No complications might arise, and should these occur they could usually be treated successfully, and the risk of operative treatment was not sufficiently increased by delay as to warrant early interference. The operative treatment consisted of the induction of labour, myomectomy, and hysterectomy. Induction of abortion should never be resorted to owing to its risks of septicæmia. Myomectomy when practicable was an ideal operation, but many cases were unsuitable as the tumours were sessile of multiple; and the mortality in this operation was greater that in hysterectomy, and this would be increased by pregnancy. Most frequently hysterectomy would form the most satisfactory and safe operation.—The President, Dr. Brewis, Dr. J. Lamond Lackie, and Dr. A. H. F. Barbour discussed the paper, and Dr. Haultain replied.

UNITED SERVICES MEDICAL SOCIETY.—A meeting of this society was held on July 1st at the Royal Army Medical College, Millbank, Surgeon-General Sir Alfred Keogh, Director-General of the Army Medical Service, being in the chair.—Lieutenant-Colonel W. G. Macpherson, C.M.G., R.A.M.C., read a paper on Some Practical Points in the Prevention of Disease in Panama and Cuba. He commenced by referring to the great object-lesson afforded by the United States Government in the prevention of disease in these countries. With this work he associated the names of Colonel Gorgas and General Wood. The latter from having at one time been a medical man was more able in Panama, and previously also in Havana, to appreciate the nature of the work that had to be carried out by the sanitarians. Lieutenant-Colonel Macpherson pointed out the significance of the fact that both against yellow fever and malaria it was not enough to organise a mosquito campaign or to rely on general sanitary precautions only. The two steps must be taken together, neither being efficacious without the other. He also showed from the history of yellow fever in Cuba, in the interval between the two periods of United States occupation, that any neglect to persist in the application of the above measures would result in a return of the once abolished disease to its former home. The first practical measure undertaken by Colonel Gorgas was the destruction of the stegomyia. To effect this it was necessary to introduce a water-supply, in order to do away with the water tanks in which the insect found its chief breeding places, to institute a system of water sewerage, to improve the sanitary condition of the houses, and to drain and to pave the streets. So efficacious had these measures been that at Colon it was practicable to impose a fine of 50*s.* on the occupier of any house where stegomyia larvæ are found. The sanitation of the terminal cities was the great point of difference between the French attempt at the construction of the Canal and the American work now in progress. In the former case 5000 Frenchmen died in the Ancon Hospital, of whom 1200 died from yellow fever, between 1881 and 1889. Since 1906 there had been no deaths from yellow fever on the Isthmus, though the number of non-immune whites had been, and was, much greater than during the years of the French occupation. A very efficient quarantine system protected the approaches to the Canal, and had sufficed to keep the zone free from yellow fever, smallpox, and plague, though these diseases were raging at Guayaquil, only two or three days' journey by sea from Panama. Colonel Gorgas was one of the seven commissioners appointed by the President of the United States to carry out the construction of the Canal, and his powers as sanitary officer were practically unlimited. His estimates of expenditure were as carefully worked out as those of an engineer building a bridge. It was calculated that the money that would eventually be expended on sanitation was about 2½ per cent. of the entire cost of construction of the Canal. Lieutenant-Colonel Macpherson then gave an interesting account of the organisation of the workers employed in sanitary work and said that he was much impressed by the emulation and activity exhibited by the various gangs. This was encouraged by the weekly circulation of a bulletin giving the incidence of disease in various gangs and camps, the divisions being tabulated by their healthiness, each inspector endeavouring to improve his place on the list. Details of the work of malaria prevention were given, and also descriptions of latrines and urinals, the main feature of which was the fact that they were constructed so as to be fly-proof.

The method of fumigation for the purpose of destroying mosquitoes was described. A whole block of houses was covered with tentage, the different pieces being laced together and the seams covered by pasting paper over them. Sulphur was then burnt in the space thus covered over which enabled the fumes to attack not only the insects in the houses but also those on the outside walls.—Lieutenant-Colonel A. M. Davies, R.A.M.C., in commenting on the paper, showed that malaria prevention must be the result of work carried out systematically on the lines of attacking the parasite in the human body and in the mosquito in its different life-stages outside the body, combining with these measures intended to protect the healthy man and the sick man from the bites of mosquitoes.—Major W. S. Harrison, R.A.M.C., Major F. F. Russell (United States Army), and Dr. F. E. Fremantle also took part in the discussion.—Sir Alfred Keogh summarised the discussion in a short speech and moved a vote of thanks to Lieutenant-Colonel Macpherson, which was unanimously accorded.

Reviews and Notices of Books.

Quain's Elements of Anatomy. Edited by EDWARD ALBERT SCHÄFER, LL.D., Sc.D., F.R.S., Professor of Physiology and Histology in the University of Edinburgh; JOHNSON SYMINGTON, M.D. Edin., F.R.S., Professor of Anatomy in Queen's College, Belfast; and THOMAS HASTIE BRYCE, M.A., M.D. Edin., Lecturer in Anatomy, University of Glasgow. Eleventh edition. In four volumes. Vol. I., Embryology. By T. H. BRYCE. With 314 illustrations. London: Longmans, Green, and Co. 1908. Pp. 275. Price 10*s.* 6*d.* net.

THE present edition of "Quain's Anatomy" having been completely re-edited and brought up to date will appear in four volumes, of which the one now under consideration is the first. The remaining volumes will comprise respectively General and Visceral Anatomy; the Nervous System and Sense Organs; and the Bones, Ligaments, Muscles, and Blood-vessels. Each volume will be complete in itself and will serve as a text-book for the particular subject or subjects with which it deals. Thus the first volume is intended to form a complete text-book of Human Embryology, the second a text-book of Histology and Visceral Anatomy, the third a text-book of Neurology, while the fourth will deal with the systems which are not included in the second and third volumes.

The text of the first volume on embryology, which originally emanated from the pen of Professor Schäfer, has been entirely and most successfully rewritten by Dr. Bryce. The number of illustrations has been increased considerably; the majority are new and many are original. They are all of good size, clearly drawn and lettered, and excellently reproduced. Colouring matter is freely used wherever necessary.

Though the book has of necessity increased in size the general scheme of the tenth edition has been adhered to. Section I. deals with general embryology. Commencing with a description of the animal cell as being the primal element out of which the adult organism is developed, the author then passes on to the structure and development of the spermatozoon and the ovum, the maturation and subsequent segmentation of the ovum, the formation of the germinal layers, the early changes in the blastoderm resulting in the formation of the embryo, the early changes in the development of the muscles, connective tissues, heart, and blood-vessels, the formation of the fœtal membranes and placenta, and concludes with a chapter on the general history of development in which the changes occurring in the human embryo from the first to the ninth month are set forth in proper order.

In Section II. a detailed description of the development of the organs of the body is given. The organs are classified according to the germinal layer from which their primary or specific elements are derived, and, with certain reservations, the description follows this classification. Thus the account of the development of the skin, the eye, the ear, and the nose is followed by that of the digestive, urogenital, vascular, and lymphatic systems, while the last three chapters are devoted to the development of the body cavity, the muscles, and the skeleton. The illustrations in this section include many excellent engravings of reconstruction models which are of great help in elucidating the text.

The present volume, which has obviously been written by an authority on embryology, gives every indication that the new edition of "Quain" will retain the place secured by its predecessors as the best standard anatomical text-book in this country. Without it no student's or lecturer's library can be complete. We have but one regret—the omission of the bibliographical lists which in former editions followed each subject. True, the author states in the preface that "these lists ..... are no longer necessary since they are to be found in a very complete form in the compendious Handbuch der Entwickelungslehre ..... and Bibliography of Vertebrate Anatomy," but as every anatomist does not possess these works we cannot but think that the present volume, good as it undoubtedly is, would have been of even greater value, both as a text-book and particularly as a work of reference, had these lists been brought up to date and retained. Beyond this we have nothing but praise for the work and we congratulate Dr. Bryce most heartily on the very able manner in which he has handled a difficult subject.

The Law in General Practice; Some Chapters in Everyday Forensic Medicine. By STANLEY B. ATKINSON, M.A. Cantab., M.B., B.Sc. Lond., of the Inner Temple, Barrister-at-Law, Justice of the Peace for the County of London, Member of the Central Midwives Board, Honorary Secretary of the Medico-Legal Society (London). London: Henry Frowde and Hodder and Stoughton. 1908. Pp. 239. Price 7*s.* 6*d.* net.

THE author has heard it said that medical students "learn many things which they will never need in subsequent practice, and in subsequent practice will need many things which as students they never learned," and has sought to fill some of the gaps in the educational course marked out for the medical student by writing for him a book which he may study with advantage before embarking upon general practice. It is in the form of a series of paragraphs having appropriate headings, and it has an index to cases cited, as well as a general index which might perhaps be longer with advantage, for the young practitioner might conceivably desire to study Dr. Atkinson's views hurriedly and without having time to search for the appropriate chapter and passage. On the whole, however, the work is rather a gossiping guide to be read before entering into the region in which the dangers referred to exist than a book of reference to be turned to later in the journey by those who by then have gained experience for themselves. To these perhaps some of the advice given would seem almost superfluous, as, for example, where in a chapter headed "The Law of Defamation" we find that "curious unprofessional friends should not be allowed to remain during a medical examination of a person," or that when consulted by a patient the practitioner should "beware of repeating a question already answered." On the whole, however, the advice given is sound, although in a few instances the proper course to adopt will ever be a matter of personal opinion, as where the author says: "If asked an awkward question by a patient, reply by asking something else," a method of evasion liable to irritate some patients without allaying their curiosity. The author's concluding chapters upon "Some Difficult Clinical Occasions," upon "Cases

arising in the Coroner's Courts," and upon "Limitations of Medical Evidence" may be read with a view to preparing the mind for those emergencies any of which may arise in the course of a general practice of any magnitude, and with regard to which when they do arise the medical man must act according to the particular circumstances in which he finds himself under the guidance of his own good sense and of his personal and professional honour.

Bulletin No. 41, Hygienic Laboratory, U.S. Public Health, and Marine Hospital Service, Washington. 1908. Pp. 757.

THE investigation into the origin and prevalence of enteric fever in the District of Columbia during 1906 brought out many facts emphasising the possible danger of milk as a carrier of disease. As a result the President of the United States directed that the United States Public Health and Marine Hospital Service should invite the coöperation of the Bureaus of Animal Industry and Chemistry of the Department of Agriculture in an investigation of the milk industry of the District of Columbia from the farm to the consumer in its relation to the public health. The fruits of this investigation have been published recently in the form of a bulletin, containing the joint work of many collaborators. It was determined to make the investigation of such a character that, in addition to being of local value, it would also be of assistance to health officers at large. With this object the report includes all available data showing the influence of milk as a carrier of infection, its chemical composition, the contaminations found therein, their influence upon it as an article of food, and the measures necessary in its production and handling to prevent such contamination. The means of obtaining clean and cold milk from healthy cows in the shortest possible time are described in detail.

Dr. Trask has compiled statistics of 500 epidemics in which milk has been shown to act as a carrier of disease. Dr. Lumsden describes how the milk-supply of cities becomes contaminated with typhoid bacilli and relates the best epidemiological methods of determining the influence of milk as a factor in the propagation of enteric fever. Dr. Anderson examined 272 samples of milk from 104 dairies to determine the presence or absence of tubercle bacilli in the market milk of Washington. He found that 6·72 per cent. of the samples contained tubercle bacilli virulent for guinea-pigs and that 11 per cent. of the dairies supplied milk containing these micro-organisms in sufficient number and virulence to render guinea-pigs tuberculous. The milk purchased by one charitable institution for the use of children caused tuberculosis in the animals upon which it was tested. Evidence of this nature emphasises the necessity of applying the tuberculin test among dairy herds and taking necessary precautions with respect to milk of doubtful character. Dr. Anderson also summarises the evidence proving that Malta fever may be spread by infected goat's milk.

A peculiar and rare disease which is known as "milk fever" is described by Dr. McCoy. It occurs in the mountainous sections of Tennessee and is an acute non-febrile disease, probably of a specific nature due to the ingestion of milk, milk products, or the flesh of animals, usually cattle suffering from trembles. The disease in man is characterised by great depression, persistent vomiting, obstinate constipation, and high mortality. With our present knowledge the treatment of the disease must be purely symptomatic, there being no specific remedy. Dr. Stiles shows that so far as the zoo-parasitic diseases of man are concerned there is little to fear regarding the presence of such parasites in milk. In statistical studies of mortality and morbidity Dr. Eager demonstrates that the high infantile mortality may be attributed almost entirely to impure milk. Dr. Wiley discusses the effects of contaminated and adulterated ice-cream upon the public health. Dr. Kastle and Dr. Roberts give a general survey of our present knowledge of the physical and chemical characters and adulterants of milk, and the chemical changes induced in milk by the action of heat, acids, enzymes, and micro-organisms. By original investigations they show that the milk ferments can withstand a temperature of from 60° to 65° C. for some time without material injury. Dr. Rosenau demonstrates, as a result of many hundred bacteriological examinations, that the market milk of Washington for the most part is old, warm, and dirty. In the summer of 1906 it contained on an average over 22,000,000 bacteria per cubic centimetre and 11,000,000 during 1907.

One of the most interesting sections of the report deals with the investigations of Dr. Rosenau and Dr. McCoy demonstrating the causes of the so-called "germicidal property of milk." They show that the decrease in the number of bacteria in fresh milk is for the most part apparent and not real. Judged by the number of colonies that develop upon agar plates the bacteria in fresh milk first diminish and then increase in number. When milk is kept warm (37° C.) the decrease is pronounced within the first eight or ten hours. After this time the milk has entirely lost its restraining action. At 15° C. the decrease is less marked but more prolonged. The decrease is due, at least in part, to agglutination. The phenomenon resembles the action of a weak antiseptic rather than that of a true germicide. It is interesting to note that the "germicidal property" is specific. For instance, one sample of milk restrained the typhoid bacillus and staphylococcus pyogenes aureus, but not paratyphoid A or B. The phenomenon does not occur in milk which has been heated above 80° C. It varies in the milk of the same animal at different times and owing to its variable and feeble action it does not take the place of cleanliness and cooling, though it may be taken advantage of in good dairy methods. Dr. Miller reviews the significance of leucocytes and streptococci in milk and points out the unsatisfactory state of our knowledge concerning their sanitary significance.

Mr. Mohler points out that probably the most important disease of cows regarded from the standpoint of public health is tuberculosis and that this disease is also the most prevalent. It is estimated by Mr. Mohler, a veterinary surgeon, that probably 25 per cent. of all the cows that supply milk in the District of Columbia are tuberculous. He recommends that all milk should come from tuberculin-tested cows, re-tested at least once a year, or should be subjected to pasteurisation. Milk from cows showing affections of the udder, anthrax, rabies, gastro-enteritis, septic conditions, or clinical symptoms of tuberculosis should not be utilised as human food, even if pasteurised. Milk from cows 15 days before and five day after parturition and that from cows receiving any deleterious drugs should likewise be excluded. Tuberculou animals should be slaughtered and their owners should be compensated by the Government.

Mr. Webster deals with the question of sanitary inspection and with its bearing on clean milk. In a series of 26 splendid photographic reproductions he contrasts the desirable and the undesirable methods of milking and handling the product. Mr. Webster emphasises the value of the "score card" system in the sanitary inspection of dairies and its bearing on the production of clean milk. The system was first introduced by Dr. Woodward, health officer of the District of Columbia, and presents many good features. The score card enumerates in tabular form the essential points relating to

the condition and cleanliness of cows, barns, milking houses, milkers, milking, and the handling of the milk, and allots a certain number of marks for each essential point. Thus, in the case of perfectly clean cows five marks would be awarded by the inspector, a perfectly clean and well-ventilated barn would receive 12 marks, and so on; the total possible marks amounting to 100. The actual marks awarded are written in a column provided for the purpose, and a column is reserved for remarks. In about 30 of the larger American cities and many smaller ones this system has been adopted, with the result that the dairy conditions are constantly improving. Milk dealers prefer, and pay more for, the product of high-scoring dairies, and the dairymen, responding to this stimulus, are able, by studying the score cards, to improve their conditions. Some cities publish the results and so rouse the dairymen to greater activity. Mr. Webster makes a series of 21 very useful suggestions for the production of wholesome milk.

Dr. Bolton writes of the dangers of contaminated water-supplies on dairy farms, and Dr. Melvin offers a practical method of classifying market milk into three grades—viz., certified, inspected, and pasteurised milk. Dr. Kerr outlines the organisation and conduct of medical milk commissions in the United States that were established to foster the production of "certified milk." The plan was formulated by a physician, Dr. Coit of Newark, New Jersey, and contemplated the sanitary supervision of dairies by a commission appointed by local medical societies for the purpose of producing pure milk, particularly for infants and invalids. He gives as a model the requirements of the Medical Commission of the Medical Society of the County of New York. The movement has been a potent factor in improving the character of the milk-supply in various parts of the United States, as it has required that only non-tuberculous cows should be used for the production of milk and that the milk should be cooled to 45° F. and transported to the consumer before noticeable changes have occurred therein. He also refers to the founding of infants' milk depôts. The important question of pasteurisation is dealt with fully by Dr. Rosenau who points out its advantages and inconveniences. The trend of present knowledge upon the important subject of infant feeding is stated in an article by Dr. Schereschewsky, wherein the importance of breast feeding is emphasised. It is shown that the caloric needs of an infant must be considered in order to insure success in artificial feeding. Some of the errors of formula feeding are pointed out, with special reference to the disastrous results which frequently ensue from over-feeding, especially with excessive amounts of butter fat. A study of the report can be confidently recommended to medical officers of health and others who are concerned with the provision of fresh, clean, and pure milk.

LIBRARY TABLE.

Les Eunuques à travers les Ages. Par le Dr. RICHARD MILLANT. Paris: Vigot Frères. 1908. Pp. 295. Price Fr. 3.50.—This is the thirteenth volume of a series dealing with various sexual perversions and forms an amplified edition of an earlier work of the same author entitled "Castration Criminelle et Maniaque." It certainly lacks nothing in thoroughness. The motives for sexual mutilation, whether self-inflicted or otherwise, whether practised as a despairing prophylactic of lust or in gratification of a strange perversion of the same passion, whether inflicted as a vengeance for marital wrongs or in degradation of a vanquished enemy, are discussed in equally elaborate detail. All ages and nations are touched upon, instances being culled from such varied sources as the classics, the records of Oriental eunuchs, and of the emasculated *soprani* of the ancient papal choir. The author devotes a chapter to the consideration of the eunuch's psychology and comes to the conclusion that he is a much more capable person than he generally receives the credit of being. The book contains a number of extraordinary stories and describes such curious customs as that which once forced a Pope-elect to have his virility tested *de visu et tacto*, by the College of Cardinals, who in turn endorsed it with the formula "*Testiculos habet et bene pendentes*" and then united in a joyous canticle beginning, "*Habet ova noster papa*"! The best and most interesting study in the book is that of the Russian secret sect, the Skoptzy, who number adherents in all classes of society and have for their chief object the obtaining of male "proselytes," often by force or fraud, whose organs of generation are completely shorn off in the course of an elaborate ritual of initiation. These fanatics are said to believe that when 144,000 victims have been thus mutilated the "number of the Lord's elect" will have been made up and that the millennium will be instituted forthwith. It seems certain that the terrible, and of course criminal, practice is the outcome of a real religious fanaticism rather than a sexual mutilation resulting from perverted mentality. Dr. Millant has studied his subject carefully and produced an interesting contribution to morbid psychology.

The Bride of the Bosphorus. A Turkish Tale in One Canto. By DAVID SANDLER, M.B., Ch.B. Edin. London: Elliot Stock. 1908. Pp. 47.—The term "bride of a river" (the Bosphorus is for all practical purposes a river) is one which takes the reader back to some of the most primitive beliefs of mankind—namely, the sacrifice of a human being to the god of or in the river. In various forms the belief persisted through the ages, becoming more and more delicate, as in the myth of Alpheus and Arethusa, until it reached its final refinement in the ceremony of the marriage of Venice to the Adriatic. Djénan, the heroine of Dr. Sandler's verses, is called the Bride of the Bosphorus because, as she explains to her confidant, she loves it. Eventually, however, she meets with a mortal lover, a Christian, who comes to an untimely end owing to the machinations of Djénan's hard-hearted father. The heroine then jumps into the Bosphorus and "with eager arm the stream received his bride." Dr. Sandler, who is a member of the Church of Scotland Medical Mission in Constantinople, evidently knows and loves that wonderful city well and can sympathise with its tragic history as exemplified in its fall. This sympathy leads him to preface the story portions of his poem with a survey of the past glories of Constantinople. In doing this he mentions various classical names and we must point out that he should make a revision of his quantities. For example, he makes the second syllable of Chalcedon short, using the word to end a line, and he uses the name Andronicus to commence a line, scanning the third syllable as short. These small things ought to be set right. To come to the narrative portion of the poem, Abdullah, the father, is well drawn by Dr. Sandler who depicts him as an unbending and strict Moslem of the Puritan type. For the benefit of readers less learned than himself Dr. Sandler should explain in a footnote to line 18, p. 15, why Abdullah hated a Persian (also a Moslem) just as an Orangeman hates a Roman Catholic, both being Christians. A word as to Sunni and Shiah would be helpful. The tragedy of Djénan, the Bride of the Bosphorus, is simply told and her epitaph, with which Dr. Sandler concludes, has the grace of the epitaphs in the Greek Anthology. Dr. Sandler evidently possesses a knowledge of Turkish life which warrants him writing on the subject, but he needs more practice in the art of blank verse writing before appearing in print. Blank verse is something more than a line of ten syllables, and classical quantities are fixed quantities.

JOURNALS AND MAGAZINES.

Proceedings of the Royal Society of Medicine. No. 8.—The June number contains reports of several cases and specimens as well as some interesting papers. They include a Case of Arterio-Venous Anastomosis for Senile Gangrene, by Mr. C. A. Ballance, and a case of Leucodermia with Symptoms of Addison's Disease, in which Cirrhosis of the Suprarenals was found, by Dr. Norman Dalton, in the Clinical Section; the account of the former is illustrated by a coloured plate, as is a case of Granulomatous Swellings at the Left Angle of the Mouth and the Right Inguinal Region, recorded by Dr. J. H. Sequeira in the Dermatological Section; in the latter section are reports by Dr. H. G. Adamson of a Nodular "Ringed Eruption," by Mr. T. J. P. Hartigan of a case of Leprosy improved by mastin, and of many other interesting cases of skin diseases by Dr. E. G. Graham Little, Dr. J. H. M. MacLeod, Dr. F. Parkes Weber, Dr. A. Whitfield, and Sir Malcolm Morris and Dr. S. E. Dore who contribute a case of Spreading Telangiectases of the Feet and Legs. In the Electro-Therapeutical Section are papers by Dr. H. Lewis Jones on Interrupted Currents, by Dr. S. Sloan on Ionic Medication in the Treatment of Certain Pelvic Diseases, and by Dr. Dawson Turner upon Electrical Work done in the Royal Infirmary, Edinburgh. The Epidemiological Section is devoted to Sir Frederick Treves's paper on Preventive Medicine in Panama. In the Laryngological Section cases are described by Dr. W. S. Syme, Dr. W. Jobson Horne, Dr. Dan Mackenzie, Dr. J. Dundas Grant, Mr. H. Clayton Fox, Dr. W. H. Kelson, Dr. Andrew Wylie, Dr. J. W. Bond, Mr. A. H. Burt, and Dr. E. Ward. The Medical Section is occupied with the discussion on Dr. A. Latham's paper on the Administration of Vaccines by the Mouth with Normal Saline Solution and with Horse Serum. The Neurological Section contains a paper on the Mechanism of Nystagmus by Sir William Gowers and a note on the Occurrence of Muscle Spindles in the Ocular Muscles by Dr. E. Farquhar Buzzard. The Obstetrical and Gynæcological Section contains Dr. R. H. Paramore's paper upon the Supports-in-chief of the Female Pelvic Viscera which has appeared in these columns and the discussion which followed it. To the Odontological Section Mr. W. Rushton and Mr. J. G. Turner contribute clinical notes and Mr. Stanley P. Mummery a careful contribution to the study of heredity from the standpoint of dental disease. In the Otological Section Dr. V. H. Wyatt Wingrave writes on the Clinical Pathology of Aural Discharges, whilst several cases and specimens are described by other observers. The Surgical Section is devoted to papers by Dr. J. C. Renton on Sciatica and its Surgical Treatment, and by Mr. F. C. Wallis with Dr. W. J. Ironside Bruce upon the Treatment of Ulcerative Proctitis by Zinc Cataphoresis.

The Hospital Gazettes.—Guy's Hospital Gazette of June 27th contains an account of a curious fatal case of Tracheal Obstruction caused by a Bean in a young child, recorded by Mr. E. P. Minett; amongst other contributions are clinical lectures on Renal Calculus by Mr. F. J. Steward, and on some Essentials in Dental Practice by Mr. W. A. Maggs.—The June number of the *London Hospital Gazette* contains an article entitled "Up the Amazon as a Ship's Surgeon." Its author has some very interesting things to say but sometimes an unhappy method of saying them; for instance, "As our party was returning to the ship we were fortunate enough to witness the shooting of the King and Crown Prince of Portugal." In spite of such slips anybody contemplating the Amazonian trip would profit by reading the article. Dr. Arthur Keith describes some interesting physiological experiments carried out at the London Hospital, which incline him to think Schäfer's compression method of performing artificial respiration to be more effective than Silvester's well-established procedure.—The chief contribution to the *St. George's Hospital Gazette* for June is a paper by Sir Edgcombe Venning upon the Position which Alcohol holds with reference to Health and Disease, which is a plea for the moderate use of alcoholic beverages; the author says that in the case of young men shut up in an office in a large city a very moderate amount of alcohol is, as a rule, a necessity, in which perhaps he goes farther than many of his readers will follow him. He gives cases to illustrate the therapeutic value of alcoholic stimulants.—*St. Mary's Hospital Gazette* for June contains the first of two lectures retrospective of the last 50 years of clinical medicine delivered recently by Dr. W. B. Cheadle, on whom the hospital has conferred the honour of an emeritus lectureship; the lecture is very entertaining and includes some tales of barbarous treatment, such as a blister waistcoat for acute pneumonia in vogue when its author was a student.—After an obituary notice of the late Dr. James Cullingworth the chief feature of the *St. Thomas's Hospital Gazette* for June is an anonymous paper narrating some sporting incidents in the Soudan.

The Quarterly Journal of Medicine. Vol. I. No. 4. 1904. Oxford: at the Clarendon Press. London: Henry Frowde.—This number, which completes the first year of *The Quarterly Journal of Medicine*, is opened with a paper by Dr. H. S. Souttar and Dr. Theodore Thomson upon the Direct Inspection of the Gastric Mucous Membrane, in which the authors describe their gastroscope, an instrument less costly and complicated than Kelling's instrument, although constructed on a somewhat similar principle. It consists of a series of short tubes strung together on two narrow steel bands, on pulling which the tubes are made to butt end to end so that an instrument which is to a certain degree "flexible" during its introduction is made rigid for the examination of the gastric mucous membrane. This is effected by an arrangement of prisms and lenses which enable the observer to see six inches of the stomach wall at one time. The authors hope that a practicable gastroscope may afford a great addition to our means of diagnosis in gastric disease, especially as between ulcer and carcinoma. The paper is illustrated excellently. Dr. Henry Robinson contributes extracts from an M.D. thesis upon the Clinical Bearing of Cutaneous Tenderness on Various Acute Abdominal Disorders, especially Appendicitis, in which, by the light of his experience of 123 cases of appendicitis, he examines the ten conclusions concerning cutaneous hyperalgesia in that disease which Mr. James Sherren put forward in THE LANCET of Sept. 19th, 1903, p. 821. He is able to agree with some of these dicta, such as "presence of cutaneous hyperalgesia is no contra-indication for operation. Abscesses may form and general peritonitis develop while it is still present"; but not with the statement that absence of cutaneous hyperalgesia is of great importance, being a sign of gangrene of the appendix if observed early in a first case, unless it is obviously mild and rapidly improving. He agrees that the symptom is occasionally of use in the diagnosis of appendicitis, but puts down its "prognostic and therapeutic significance" as slight. He finds that it most commonly affects the skin innervated from the eleventh dorsal segment of the spinal cord, and considers it to be a reflex due to irritation of afferent nerves from the appendix, but not always due to tension. The paper also deals with 71 cases of other abdominal and pelvic disorders, in certain of which cutaneous tenderness was observed. The next contribution records an experimental study carried out at the Lister Institute of Preventive Medicine, "On the Origin of Endogenous Uric Acid," by Dr. E. P. Cathcart, Dr. E. L.

Kennaway, and Dr. J. B. Leathes. The authors thus summarise some of their conclusions. "1. A marked increase in the output of endogenous uric acid has been found to occur in three conditions. (*a*) Fever. (*b*) Exposure to cold. (*c*) After severe exertion. The increased output coincides and terminates with the febrile rise of temperature, coincides with and outlasts by many hours the exposure to cold, follows the exertions, and lasts for many hours after them. It is suggested that the uric acid has its origin in metabolic processes occurring principally in the voluntary muscles, and not immediately related to voluntary contractions and work. 2. The daily tide of uric acid, high output in the morning, low at night ..... is due to the quickened activity of all the functions, especially of the voluntary muscles, which results from the rest of sleep." This careful and important paper is followed by an interesting note by Dr. Samuel West on the Respiratory Movement in Hemiplegia with a cyrtometer tracing showing peculiar changes in the shape of the paralysed side of the thorax and respiration tracings showing the peculiar effects of coughing in a case under the author's observation. Dr. R. G. Elwell follows with a monograph upon Primary Malignant Disease of the Vermiform Appendix which includes a report of a case under Mr. A. E. J. Barker's care, and an admirable bibliography and summary of reported cases of this rare condition. He finds that "in only five of the reported cases of carcinoma of the appendix did the tumours betray a malignant nature, and in three of these cases the growth may have had a cæcal origin. The remaining cases show a very early age incidence, a relationship with inflammatory conditions, and an absence of the clinical features of malignancy. Histologically the tumours showed spheroidal or columnar cells or a transitional type. In many cases the cells were comparable to those of an endothelioma. Dr. W. Hale White writes on a curious condition of "Pads on the Finger-joints" which are sometimes associated with Dupuytren's contraction. A histological examination shows them to be pure new growths of fibrous tissue, as appears in an illustration. The last paper in this number is on the Extra-Systole, and is the second part of Dr. James Mackenzie's "Contribution to the Functional Pathology of the Primitive Cardiac Tissue."

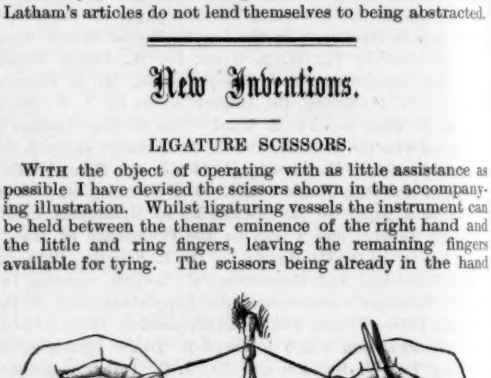
Transactions of the Ophthalmological Society of the United Kingdom. Vol. XXVIII., 1908. Fasc. 2. London: J. and A. Churchill. Price 4*s.* net.—The Transactions of the Ophthalmological Society are in course of publication in a new form, and we are requested by the publishers to intimate that they are now issued in three parts annually, any of the fasciculi being purchasable at the price of 4*s.* net each. With the exception of three all the preceding volumes, numbering 27, can be supplied. The articles contained in the present part are: 1. A New Form of Scotometer, by P. C. Bardsley. It is constructed of a section of a dull blackened sphere, which can be rotated; in the centre of this are a fixation disc and a fine slot in which a minute variously coloured disc can be moved. The surgeon inspects the eye from behind the sphere and with the aid of a scale of degrees it enables the presence, size, and form of scotomata to be determined accurately. The instrument is well spoken of by those who have tried it. 2. A case of Buphthalmia Apparently Cured by the Performance of Iridectomy, by Sydney Stephenson. 3. A case of Obstruction to the Left Carotid and Central Arteries of the Retina (? Thrombosis) associated with Right Hemiplegia and Atrophy of the Left Optic Nerve, by Leonard G. Guthrie and M. Stephen Mayou. 4. Microphthalmia resembling Glioma, with Leuticonus and Hypertrophy of the Ciliary Body, by M. S. Mayou. 5. Optic Neuritis in Cerebral Tumours, by L. J. Paton. 6. Carcinoma of Orbit originating in a Meibomian Gland, by S. Snell. 7. Coloboma of Iris in Each Eye occurring in Five Generations, by S. Snell. 8. The Venous Connexions of Schlemm's Canal, by Thomson Henderson.

The Biochemical Journal. Edited by BENJAMIN MOORE, M.A., D.Sc., and EDWARD WHITLEY, M.A. Vol. III., No. 5. June 26th, 1908. Published by the Johnston Laboratories, University of Liverpool.—This number contains two important articles by Dr. P. W. Latham, late Downing professor of medicine in the University of Cambridge, on the Complete Electrolytic Decomposition of Egg Albumin at 180° C. and on the Synthesis of Living Albumin, and a third article by Dr. W. J. Dakin, M.Sc., on the Osmotic Concentration of the Blood of Fishes taken from Sea Water of Naturally Varying Composition. Dr. Dakin finds that the blood of marine teleosts has a considerably higher osmotic pressure than that of fresh water teleosts, which indicates a permeability of the bounding membranes, though probably only the gills, to water. The teleosts contrive to maintain an osmotic pressure for the blood which is almost independent of the external water. Though considerable variations exist in any one species of teleost in water of the same density, yet there is a "mean" for the osmotic pressure of the blood which is distinct and peculiar to the respective species. Different species react differently to the same changes in the outer medium. Dr. Latham's articles do not lend themselves to being abstracted.

New Inventions.

LIGATURE SCISSORS.

WITH the object of operating with as little assistance as possible I have devised the scissors shown in the accompanying illustration. Whilst ligaturing vessels the instrument can be held between the thenar eminence of the right hand and the little and ring fingers, leaving the remaining fingers available for tying. The scissors being already in the hand



rapidity is insured and the necessity for an assistant to divide the ligature is obviated. The instrument is made by Allen and Hanburys, Limited. ERNEST E. WARE.

London, W.

THE National Academy of Medicine of Venezuela will hold a memorial session on Feb. 12th, 1909, in honour of Charles Darwin, that being the date of the great biologist's centenary. The eloquent words of the Academy in deciding to hold a special memorial meeting and to award a prize for the best essay on the Influence of Darwinism upon the Progress of Modern Medicine are as follows. "Que Charles Darwin fut, non seulement le plus grand des naturalistes de son siècle, mais en même temps un esprit de sélection, un profond penseur, un savant éminent, un maitre illustre, un apôtre de la vérité et un important facteur du progrès et que par sa puissante et salutaire influence sur l'œuvre de la civilisation, il a bien mérité de l'admiration, de la gratitude et du respect de l'histoire."

THE LANCET.

LONDON: SATURDAY, JULY 18, 1908.

Royal College of Surgeons of England.

THE recent election of members of Council is of no little interest, for it demonstrates clearly the determining causes which are of most effect in influencing the votes of the Fellows. The four successful candidates were Mr. A. PEARCE GOULD, Mr. W. ARBUTHNOT LANE, Mr. W. F. HASLAM, and Mr. C. B. LOCKWOOD, and the success in each instance was due to an obvious cause. Mr. PEARCE GOULD was re-elected because he had done well in the eight years during which he has been a member of Council. He received the support of his own hospital as well, and this two-fold interest was sufficient to place him at the head of the list, even though he received only eight plumpers. It is somewhat exceptional for the highest place to be taken by a re-elected member of Council, and the fact that Mr. PEARCE GOULD achieved this position shows the widespread recognition of his worth. Mr. HASLAM'S election is mainly due to the vote of the provincial Fellows who can always put a candidate on the Council when they choose; he is an excellent surgeon and will prove, we feel sure, a distinct gain to the Council. Mr. ARBUTHNOT LANE and Mr. LOCKWOOD were no doubt chosen as representatives of two of the largest medical schools in London. The St. Bartholomew's vote was given to Mr. LOCKWOOD, and although that hospital was perhaps over-represented already it has succeeded in placing him on the Council. Mr. ARBUTHNOT LANE represents Guy's Hospital and his high position at the election is partly due to the widespread knowledge of his original work, but it is also to no small extent due to the large number of plumpers which he received; these 72 plumping votes are a confession by the Fellows who gave them that they were unable to decide as to the relative merits of the other candidates. We are glad to see Mr. ARBUTHNOT LANE on the Council but we must express our objection to plumpers. As Mr. HASLAM and Mr. LOCKWOOD tied, it follows that Mr. LOCKWOOD, the junior Fellow of the two, will be the substitute member of Council for Mr. HOWARD MARSH and he will therefore have to seek re-election in 1910. The unsuccessful candidates were Mr. GEORGE EASTES, Mr. W. HARRISON CRIPPS, Mr. BILTON POLLARD, and Mr. J. LYNN THOMAS. Mr. EASTES, who came forward as a representative of the general practitioners, fought a very good fight and received only 11 votes less than Mr. LOCKWOOD.

At the meeting of the Council held on July 9th Mr. HENRY MORRIS was re-elected President and we congratulate him on the honour. The most interesting item on the agenda was the consideration of the report of the committee on the poll of the Fellows and Members on the question of the admission of women to the examinations of the College. For the actual figures we refer our readers to the report of the meeting of the Council, and they are worthy of a little study. In answer to both questions, whether women should be admitted to the Membership only or also to the Fellowship, there was a definite majority against, but the total majority against admitting women to the examination was only 415 out of 9451, or less than 4½ per cent. As to the Fellows, in the answers to each question there was a majority in favour of admission; even in the case of the Members the adverse majority in answer to the question as to the desirability of admitting women to the Membership was only 703 out of 8413, or less than 9 per cent. These figures are very instructive, especially when we bear in mind that more than 5000 of the circulars sent to Members were unanswered. The consideration of the report was deferred to the October meeting of the Council. The poll has given a fairly balanced result and the members of the Council will perhaps feel justified in acting on their own convictions. The ill-advised action of some Members in seeking to qualify the answers to the questions led to these modified answers being neglected, and we fail utterly to see what benefit to the cause of the Members was likely to arise. It is perhaps natural that some of the Members of the College should be disappointed that the Council will be able to admit women to the examinations of the College without the necessity of obtaining a new charter, for if a new charter had been required it might have been possible for the Members to obtain the insertion in it of a recognition of their right to representation on the Council. We hope that before long the aspirations of the Members will be fulfilled, but we think that the question of the admission of women to the examinations is so little germane to the question of the representation of the Members that it is well not to confuse the two. We consider that the time is ripe for another poll of the Fellows as to the desirability of granting to the Members some share in the government of the College.

The Coroner's Inquests Bill.

UNDER the above title a private Member's Bill has passed through its report stage in the House of Commons, progress on its part which may not unreasonably cause its promoters to expect to see their measure placed upon the statute book before the close of the session under the title "The Coroners Act Amendment Act, 1908." The Bill amends the Act of 1887 in one particular only, having for its object no more than the doing away with the necessity that the coroner's jury should personally inspect, or at all events look at, the dead body upon which the inquest is being held, the words used being that "it shall not be necessary for either the coroner or the jury at any inquest to view the body unless the coroner, or at the first sitting of the inquest a majority of the jury, shall deem a view necessary." This will no doubt effect a desirable improvement in the procedure, but it is perhaps a pity that the law should be

improved by instalments, when there is need for more or less thorough revision, as is the case with the branch of it relating to the holding of inquests and to the kindred subject of the certification and registering of deaths: the removal of a well-known minor grievance appealing to popular sentiment may tend to delay more thorough and more genuinely needed reform. Apart from this, there can be few who would desire to see the viewing of the body retained except from antiquarian motives and from a desire to preserve a link with a past when medical evidence was dispensed with and would, perhaps, not have been of great service had it been insisted upon. The viewing of the body expressly ordered by the Coroners Act, 1887, was, we can well imagine, a most important portion of the inquiry when, for example, the Act of EDWARD I. was passed which laid down the coroner's duties in considerable detail. In the thirteenth century, however, the coroner had to inquire into the crimes of a rude age. He was to "go to the places where any be slain or suddenly dead or wounded or where houses are broken or where treasure is said to be found," and to summon people who might inform him on oath "if they know where the person was slain, whether it were in any house, field, bed, tavern, or company, and who were there." In those days the inquiry was not held with the aid of a jury as we now understand it so much as by the coroner with the help of persons summoned by him to be at once witnesses and jurors. In those days upon "appeal of wounds" the jurors had to view all the wounds, "the length, breadth, and deepness, and with what weapons and in what part of the body the wound or hurt is, and how many be culpable and how many wounds there be, and who gave the wound." This, moreover, was in days when anyone over 12 years of age had to come to assist the coroner if so ordered, just as now many are brought before him as witnesses, although of tender years.

Since these primitive, but important, inquiries were held, however, inquests have developed in procedure, and now when members of the jury have the advantage of better education than their fathers and sit under the guidance, in many instances, of medical coroners, correct conclusions are arrived at in cases of difficulty which would hardly have been approached at all in the days even of our immediate ancestors. Scientific evidence during the intervening period has, of course, developed enormously, and juries listen to the testimony of medical witnesses who inform them with authority as to the cause of death, besides assuring them incidentally that there is a corpse upon which, to use a quaint popular phrase, they are sitting. Evidence of the identity of the body is forthcoming in most cases, from persons who must necessarily have seen it in order to qualify themselves for the task of identification. No useful purpose, therefore, can be accomplished by the jury viewing the body just as they did when it was their duty themselves to tell the coroner who it was who had met with his death and everything else that they might know upon the subject. To the coroner, should he be a medical man, inspection of the dead body conveys a certain amount of information, but the experience which he has acquired in the practice of his profession will be of greater service in enabling him to appreciate and to sum up to the jury medical evidence given by those who have done more than make a superficial examination only. The view itself has always been a painful experience for many of those who have had to make it as members of a jury, and so far from assisting them in arriving at a correct conclusion, has perhaps on frequent occasions disturbed and confused an intelligence not always of the highest order. It is true that whatever sanitary dangers or indecency there may have been in the past as undesirable accompaniments of such a ceremony they have been avoided in more recent times by the interposition of glass and by the exposure of no more than an absolutely necessary portion of the cadaver.

For these reasons there is every cause to congratulate those whose efforts to pass a Bill into law dealing with a topic of not overwhelming importance seem likely to be crowned with success. It is to be hoped, however, that at no very distant date some more complete overhauling and recasting of the law relating to inquests and to the registration of deaths and their causes may take place. We have no desire to drag in the name of Mr. TROUTBECK as an instance unnecessarily, but the fact remains that for several years he has been able to employ a certain pathologist practically for all inquests, and apparently in the teeth of the Act of Parliament under which he holds them. More recently the same coroner has attracted universal attention by discovering a duty as well as a jurisdiction to hold inquests upon a class of cases upon which other coroners do not hold inquests at all, the peculiarity of the position which he takes up being accentuated by the fact that in 1887, when the Coroners Act was passed, and in the years preceding it, the opportunities for such inquests were far more numerous than now. If one coroner can do this, so that his practice differs essentially from that of his predecessors and his contemporaries without there being any recognised manner of testing his interpretation of the law, it seems evident either that the law should be made clearer or that means should be provided for having differences of opinion with regard to it settled by high authority. Meanwhile, however, the abolishing of the viewing of the body as an essential part of the inquest is a useful reform which will commend itself to medical men and which is largely due to the expression of medical opinion, and is to be welcomed even if other improvements might have been effected simultaneously with it.

The Cavendish Lecture on the Etiology of Pulmonary Tuberculosis.

THE problems connected with the etiology of pulmonary tuberculosis become, if anything, more involved with advancing knowledge in regard to that disease, and they are among the most interesting and the most hotly contested in the whole field of human disease. Although it is now more than 25 years since KOCH, in a research of singular completeness and accuracy, established the causal rôle of the tubercle bacillus in the production of tuberculosis, yet there remain for solution several important questions in connexion with infection by that organism. Since the celebrated and

startling pronouncement made by KOCH at the British Congress on Tuberculosis held in London in 1901 as to the duality of the human and bovine types of tuberculosis, and his further statement that the bacillus of the bovine disease is practically incapable of infecting the human subject, attention has been especially directed to those aspects of the question; but now that the statements of KOCH have been controverted and the infectivity of the bovine type of bacillus for man has been definitely established there are other collateral problems which demand consideration, among them the relative frequency of infection by the bovine and the human types in cases of tuberculosis in the human subject, the actual relation of the two types of bacilli to one another, and the question as to the channels and the manner of infection. The importance of these questions is enhanced by their obvious practical significance in regard to the recommendation of prophylactic measures for adoption in the fight against the disease. In the Cavendish lecture delivered on June 26th before the West London Medico-Chirurgical Society by Sir WILLIAM WHITLA, which we publish at p. 135 of this week's issue of THE LANCET, there is presented an admirably critical *résumé* of recent work in regard to some of these problems in the etiology of the disease. Sir WILLIAM WHITLA first discusses the differences which exist between the bovine and the human types of tubercle bacilli in regard to their morphological and cultural characters, their chemical activities, and their pathogenic properties. He devotes special attention to the consideration of the effects produced by the two types of bacilli in various experimental animals, including rabbits, guinea-pigs, swine, goats, and bovines, and points out that it is generally admitted that the bovine bacillus has a higher infective power than the human variety for bovines and in general for all mammals, the case of man being excepted. He also refers to the results obtained in the investigation of tuberculosis in the human subject by the English and the German Commissions, the former having obtained the bovine bacillus in 23 per cent. of the cultures from human cases, while the German Commission found it in 10 per cent., and in both series it was practically confined to cases in childhood. It is obvious, therefore, that the tuberculosis of bovines is transmissible to man, and in spite of the denials of KOCH and his adherents it has been demonstrated that in young bovines if a sufficient dose of bacilli of human type be given a disseminated tuberculosis can be produced. Sir WILLIAM WHITLA therefore accepts "the conclusions of the great majority of all recent workers about the practical identity of human and bovine tuberculosis." The same idea is expressed in a quotation from Professor JAMES that "the bacilli of human and bovine tuberculosis are the same organism but modified by change of host."

The channels of infection by the tubercle bacillus are considered in some detail and the various experiments directed to their investigation are described and criticised. RAVENEL has recently maintained that the tonsil is frequently the portal of entry, the bacilli being derived from the food, and he has pointed to GROBER'S experiments demonstrating that the pleura might be infected in this manner directly by way of the cervical lymphatic glands. Sir WILLIAM WHITLA having referred to these observations proceeds to discuss in detail the frequency of the two most probable routes of infection—the respiratory tract and the intestinal canal. There can be no doubt that the discovery of the tubercle bacillus and its abundant presence in sputum and the frequency with which the oldest lesions, or, indeed, the only lesions, are found in the lungs and bronchial glands have served to direct special attention to the possibility of aerogenous infection by inhalation. Consequently the suggestion made by VON BEHRING in 1903 that tuberculosis usually originated from the ingestion of tubercle bacilli in cows' milk in childhood, with a longer or shorter period of latency, did not at first obtain recognition. Recently, however, the whole subject has been reopened by the striking experiments of VALLÉE, CALMETTE, GUÉRIN and BRETON, and VANSTEENBERGHE and GRYSEZ, and it is difficult to resist the conclusion that the ingestion of tubercle bacilli by the alimentary canal plays a very important part in the production of pulmonary tuberculosis. Sir WILLIAM WHITLA'S account of these experiments is most interesting and is sufficiently detailed to be quite clear. Its value is further enhanced by the record of some experiments carried out by himself in conjunction with Professor W. ST. CLAIR SYMMERS of Belfast to test the conclusions of the school of CALMETTE. They comprise experiments devised to test the channels of absorption of particles of carbon and of tubercle bacilli. Their first experiments were made with a suspension of finely powdered Chinese ink in water, and it was found that if this were injected into the blood stream the carbon particles were rapidly picked out by the lungs. Feeding experiments conducted with special precautions to avoid soiling of the pharynx or the air passages showed that if an emulsion of Chinese ink in olive oil and water were administered through a stomach tube to guinea-pigs the lungs soon became engorged with carbon particles, although the mesenteric glands remained free from any noticeable impregnation. The obvious explanation of these results, which are in entire accord with those of VANSTEENBERGHE and GRYSEZ, is that the carbon particles pass through the intestinal epithelial surface, reach the lacteals or lymphatic paths, and passing through the mesenteric glands are conveyed to the thoracic duct, either inclosed in phagocytes or free. From the thoracic duct they pass into the venous circulation and are conveyed to the lung capillaries. It is of interest to find that in young animals somewhat different results are obtained, since the mesenteric glands filter out the pigment particles and effectually prevent pulmonary anthracosis from the alimentary ingestion of carbon particles. Further experiments by VANSTEENBERGHE and GRYSEZ seem to show that even when anthracosis of the lung results from the inhalation of an atmosphere laden with carbon particles the actual pigmentation of the parenchyma of the lungs occurs by the intestinal route owing to the swallowing of carbon particles arrested in the nasal and pharyngeal passages. The suggestiveness of these observations in regard to the etiology of pulmonary lesions is greatly increased by the fact that CALMETTE and GUÉRIN arrived at practically identical results in regard to the tubercle

bacillus. The comparative rarity of *primary* intestinal tuberculosis was one of the points adduced by KOCH against the intestinal origin of pulmonary tuberculosis, and this fact has long served to divert attention from this question, but if it can be proved that the tubercle bacillus is able to pass through the intestinal epithelium like the carbon particles without producing any local lesion the dangers of intestinal absorption of bacilli become at once apparent. That this absorption can occur without local lesion has now been proved by numerous experiments by different observers, notably by CALMETTE and his co-workers. The same observers have shown that the involvement of the deep cervical glands cannot necessarily be taken as demonstrating that the bacilli gained entrance through the mucous membrane of the mouth, tonsils, or pharynx, since these glands, in common with the entire lymphatic system, may become infected by bacilli absorbed from the intestine.

CALMETTE and GUÉRIN showed that a similar difference existed between young and adult animals in regard to tubercle bacilli to that demonstrated by VANSTEENBERGHE and GRYSEZ in regard to carbon particles. In young goats the lungs show tuberculous lesions when the mesenteric lymphatic glands have become caseous, whereas with older animals the bacilli lead to tuberculosis of the lungs without producing visible lesions in the mesenteric glands. These results are explained by the histological differences which exist between these glands in young and adult animals. Sir WILLIAM WHITLA sums up the conclusions of CALMETTE and his co-workers in the following words: "In the immense majority of cases pulmonary tuberculosis is not contracted by inhalation but by the ingestion of bacilli or bacilliferous products which penetrate (as surmised by VON BEHRING) the intestinal mucosa." These observers do not, however, in the light of the ease with which intestinal infection occurs in adult animals accept the further suggestion of VON BEHRING that the cases of tuberculous disease in adults are the result of an intestinal infection contracted in infancy.

The concluding portion of Sir WILLIAM WHITLA'S address is devoted to the application of these experimental researches to clinical medicine. He emphasises the importance of recognising that the milk of tuberculous cows is a common source of tuberculous disease in children through the channel of the alimentary canal, and in confirmation of this points to the fact that the bovine type of bacillus has been detected in a considerable percentage of cases of human tuberculosis. In this connexion he refers to the observations of Dr. J. P. WATT published in THE LANCET of May 9th, p. 1357, who demonstrated the presence of the bovine type of bacillus in the cerebro-spinal fluid of a child who had died from tuberculous meningitis and in the lesions of a cow with extensive tuberculous deposits, the milk from this animal having been used in the diet of the child. It is also of interest to note that in the case of the child there was a caseous gland in the mesentery, which further supports the view that the infection occurred by the digestive tract. Sir WILLIAM WHITLA refers to some outbreaks of tuberculous disease in a charity school which he has had under his own observation and coinciding with tuberculous disease in cows supplying the institution with milk, although the type of bacillus was not established, so that the evidence of the bovine origin, though suggestive, is not conclusive. Sir WILLIAM WHITLA is to be congratulated upon the manner in which he has presented the case for intestinal infection and we heartily commend his lecture to those of our readers who desire a clear exposition of the recent evidence in this connexion. There are however, many points which are still obscure, among them, firstly, the reason why the bovine type of bacillus is apparently found only in children, and secondly, the source and date of infection in the majority of cases of tuberculous disease in adults. And even admitting that the alimentary infection is a common or even a preponderating factor in the production of the disease, it is most strongly to be insisted upon that no relaxation of the precautions in regard to aerogenous infection should be countenanced.

Annotations.

"Ne quid nimis."

THE VISIT OF THE KING AND QUEEN TO LEEDS.

THE visit of the King and Queen to Leeds to open certain additions to the University buildings will for long be remembered as one of the most important events in the history not only of the University but of the city and of the county. It is just 50 years since a reigning monarch paid a visit to Leeds, for in 1858 the late Queen Victoria opened the town hall. We have to go back to the time of Charles I. before we find any record of a King being in Leeds and his visit was under markedly different conditions, and on no previous occasion, so far as is known, has Leeds had within its boundaries a King and a Queen at the same time. It must be a source of the greatest satisfaction to all who have been in any way concerned in making and in carrying out the many arrangements for the visit to feel that the great events of the day were transacted in a manner which caused manifest pleasure to their Majesties, which reflected credit on the city, and which added to the dignity of the University; moreover, there was not a single accident. To those interested in the welfare of the University the visit has been a most gratifying occasion. Very many of those who were present at the ceremony at the University will readily carry their minds back to the year 1885 when the King, the Prince of Wales as he then was, formally opened the first block of the buildings to which these recent additions have just been made. A larger number will remember that the Prince of Wales when Duke of York opened the new examination hall of the Yorkshire College and the new medical school in the year 1894. Four years ago His Majesty was graciously pleased to incorporate the Yorkshire College by Royal Charter as the University of Leeds, and it has caused the liveliest satisfaction in University circles that he has paid a visit to the institution for which already he has done so much. The addition of extra accommodation for arts and literary subjects, the provision of a building for electrical engineering and a properly equipped department for physics, together with the enlargement of the department for biology consequent on the creation of separate professorships of zoology and botany, make a substantial step in the right direction, though it by no means exhausts the immediate requirements of the University. The members of the Faculty of Medicine are keenly alive to the necessity that exists for the provision of a properly equipped department of pathology, not only for teaching purposes but for the requirements of research, and it is

earnestly to be hoped that the council of the University will find itself in a position to incur the necessary expense at an early date.

THE BRACING EAST COAST.

—	Highest temperature.	Mean maximum temperature.	Mean minimum temperature.	Range of temperature.	Mean temperature.
Aberdeen ...	75	63·5	49·9	13·6	56·7
North Shields	77	62·1	48·3	13·8	55·2
Scarborough ...	72	63·5	50·3	13·2	56·9
Skegness ...	67	60·5	53·6	6·9	57·1
Yarmouth ...	69	62·8	52·6	10·2	57·7
Lowestoft ...	65	60·3	50·8	9·5	55·6
Clacton	71	65·5	51·7	13·8	58·6
Margate	72	62·9	53·9	9·0	58·4
Folkestone ...	72	66·7	51·2	14·5	58·5
Brighton ...	82	71·5	53·1	18·4	62·3
Southsea ...	83	73·6	53·5	20·1	63·6
Bournemouth	81	73·7	49·5	24·2	61·6
Weymouth ...	81	70·7	52·6	18·1	61·7
Torquay	77	69·1	53·7	15·4	61·4
Bath	85	74·8	49·1	25·7	62·0
London	83	73·1	53·7	19·4	63·4
Nottingham ...	84	72·6	47·3	25·3	60·8
Harrogate ...	81	70·1	47·4	22·7	58·8

That the east coast is generally more bracing during hot weather than the south coast and centre of England is a matter of common knowledge and experience, but even the east coast can be hot at times, and it is rare for it to escape entirely a hot spell as it did during that which prevailed over the other parts of the kingdom from June 20th until July 3rd. The east coast is sometimes, indeed, the hottest part of the whole country. But that phenomenon is very rare and only occurs for a few days when the weather chances to be very fine and bright with the wind light from the west or south-west. During almost every day of the hot period, which came to an abrupt and violent end on the night of July 3rd, the flow of air was from the east or north-east, and under such conditions—conditions which form the general rule in hot settled weather in this country—the east coast can never be very hot, even under such uninterrupted sunshine as that which characterised the recent weather. The figures above show the highest temperature at many selected spots from June 20th to the 3rd of the present month and also the mean maximum shade heat, the minimum temperature of the nights, the mean range of temperature, and the mean of the maxima and minima combined. It will be observed that the coolest days were experienced at Lowestoft and Skegness, where the mean maximum was only about 60·5°, against a mean of 73·1° in London, 73·6° at Southsea, 73·7° at Bournemouth, and 74·8° at Bath. Further along the south coast towards Devonshire the days were less hot, Weymouth having a mean maximum of 70·7° and Torquay a mean of 69·1°. This latter figure is just a degree lower than that at Harrogate. The difference in warmth, however, was confined to the daytime, the mean minimum figures showing that the nights were quite as mild on the east coast as they were on the south coast. Some places in the former region were, indeed, milder than some of those on the south coast. Skegness, one of the very coolest under the brilliant sunshine, was warmer than any of the south coast resorts with the exception of Torquay, while the east coast resorts generally, and even Aberdeen, were appreciably milder than Bournemouth. The range of temperature along the east coast was remarkably small, especially at Skegness, Margate, and Lowestoft, while at Bournemouth it was rather more than 24° and at Bath nearly 26°. The mean warmth was greatest at Southsea, Brighton, and in London, and least at North Shields and Lowestoft. The London observations, however, are obtained from instruments placed in a screen on the cool banks of the lake in St. James's Park and consequently fail to represent the heat of the busy city and crowded streets. If thermometrical readings were obtainable from instruments placed in the regulation screen in the City or in Trafalgar-square it would doubtless be found that the metropolis, during weather similar to that under discussion, is by far the hottest spot in the kingdom.

SOME DANGERS OF THE NON-PATHOGENIC MICRO-ORGANISM.

THE words "microbe," "germ," "micro-organism," "bacterium," and "bacillus" are invariably associated in the public mind with disease and on this account some authorities on the subject have taken the trouble to differentiate carefully between those micro-organisms which are foes and those which are friends. After all, and so far as the sum of knowledge goes, the bacteriological world contains an infinitely greater number of organisms which are congenial to man's existence than of those which conspire to break down his machinery. Yet if recent researches prove to be correct in their interpretation there are organisms which although entirely dissociated from any function which proliferates disease in man act together with such vigour as possibly to release great potentialities, with the result that the field of their labours may become sooner or later a danger zone. Spontaneous combustion, for example, is well known to be the act of micro-organisms. The firing of a hay-stack is nearly always the work of a bacterial incendiary. Barns, granaries, and spinning works have thus been destroyed by fire owing to the active oxidising powers of micro-organisms. The carefully gathered crop of cotton or hops may fall to the same destructive agencies. The category may be extended according to recent work on the subject. Even lamp black, charcoal, coal, and peat are found to be readily oxidised by a common organism of the soil, a fact which may ultimately establish that after all the micro-organism may account for the spontaneous heating of coal, for the awful disaster of the coal mine. In human history there have been several appalling disasters arising out of great conflagrations, the origin of which has remained undiscovered. It is thus possible that the tiny, minute organism has been guilty of unlocking vast pent-up forces. The key of the micro-organism is its power to pair affinities. A heap of gunpowder looks harmless enough until the spark reaches it, but that spark may be supplied by the unceasing toil of a microbe patiently but surely oxidising the oxidisable material present, until at last heat being sufficiently developed and concentrated chemistry completes in a startling way the work begun by the bio-entity.

A SCHOOL OF HOUSEWIFERY.

WHEN the elementary school girl leaves school at the age of 14 years she is expected, of course, to enter upon some employment by which with the money earned she can help to keep herself and to join in the maintenance of the home. Some are required to take the place of their mothers while the parent goes out to work and some have to keep house for their fathers. The fact that the majority of these girls have but little notion how to manage the home is a fruitful source of illness and domestic expense. Few, if any, have but the slightest knowledge of hygiene even in its rudimentary stages, and they can only be trusted with the care

of their younger brothers and sisters with a certain amount of risk. The curriculum of the elementary schools allows little or no time for the study of domestic science and thus it is that girls, conscious of their inaptitute for their new duties, soon lose all interest in them, and the attractions of casual outside employment—an already flooded market—are favoured. In the last school year at Brighton 60 per cent. of the girls who left school became engaged, probably unwillingly in many cases, in the care of their homes, and an effort is to be made in this well-known Sussex town to make the home duties more attractive to girls by giving them instruction in many branches of domestic science, and whilst the girls will gain in pleasure at being made useful those dependent upon their ministrations will gain in health. The education committee of the town on June 30th decided in principle to establish a school of housewifery where girls from the elementary schools, over 13 and under 18 years of age, can receive a course of instruction in home training, cooking and catering, housewifery, laundry work, dressmaking and mending, hygiene, and the care of infants. It is proposed that the instruction shall be given in a private house which shall have been converted into suitable premises, and the practical teaching, as shown by the subjects to be taken, should be found to exert a very beneficial influence on the home life of the poorer classes, while to those going out as domestics the instruction should be most useful. Girls with a knowledge of home duties would be welcome in many a family and worth quite as much to the home as she might bring in from some business house where female labour is already too abundant. The progress of the scheme at Brighton will be watched with considerable interest.

THE NATIONAL UNION OF PUBLIC HEALTH AUTHORITIES.

OUR readers will remember that during last year we announced the formation of a National Union of Public Health Authorities, having for its ultimate aim the establishment of a supreme health authority for the nation, and with the immediate objects of securing greater uniformity in the administrative procedures of local sanitary authorities and of promoting the general recognition of the extreme importance of the Public Health Service for the welfare of the nation.[1] The first annual meeting of the union was held in Westminster at the end of May to ratify the constitution and to draft the rules of the Union. Alderman H. W. Newton and Dr. H. E. Armstrong, both of Newcastle-on-Tyne, and the originators of the movement, were elected as president and honorary secretary respectively for the coming year, with Alderman H. E. Solomon (Swansea) as vice-president, Councillor D. Adams (Newcastle-on-Tyne) as honorary treasurer, and Dr. Meredith Young, medical officer of health of St. Marylebone, as acting secretary. The proposed rules were passed by the meeting and in an editorial comment upon their wording the *Councils' Journal* shrewdly points out a defect which may affect seriously the constitution of the Union. Rule 6 specifically provides that the medical officer of health of any authority in the Union may attend and speak at all meetings but shall have no vote, in accordance with the principle that the Union is to be one of public health authorities and not of officials. There is nothing, however, in the rules to prevent a town clerk from being delegated by his authority to vote at meetings of the Union and council. It follows that a district returning its medical officer of health as its representative will be disfranchised, although another official serving under the authority may be returned with voting powers. The *Councils' Journal* sees in this a loophole through which a body of town clerks may pass to rule the Union and it asks that the rules shall be so amended that no office-holder under a sanitary authority shall represent that authority, although the privilege specifically accorded to medical officers of health to be present and to speak at meetings without voting shall be retained. Considering the special nature of their knowledge, if the Union sought to exclude them from its deliberations it would be simply stultifying its existence, and we are glad to see that the journal from which we quote recognises the importance of retaining their presence at the meetings. It seems equally clear that the law officials of authorities should be formally debarred from representing them on the Union if it wishes to insure the validity of the fundamental principle of its constitution.

[1] THE LANCET, May 25th, 1907, p. 1445, and August 24th, 1907, p. 542.

THE OCCURRENCE OR ABSENCE OF OPTIC NEURITIS IN CERTAIN CASES OF CEREBRAL TUMOUR.

OPTIC neuritis is well known to be of frequent but not of constant occurrence in cases of cerebral tumour. The presence of optic neuritis is not only an important symptom of cerebral tumour but the record of cases, many of which have been published by Mr. R. Marcus Gunn, shows that it often enables a fairly accurate diagnosis of the situation of the tumour to be made. It is clearly of interest and importance to know why this symptom should be occasionally absent and an article by Mr. L. J. Paton in the Transactions of the Ophthalmological Society of the United Kingdom, founded on the investigations which he has made on 252 cases that have fallen under his observation, gives some clue to the explanation required. Of these 252 cases there were 45 in which the symptoms were not definite enough to allow of accurate localisation, whilst in five cases tumours were simulated and post-mortem examination showed that the symptoms were due to other causes. Every case of temporo-sphenoidal tumour and all the 41 cases of tumour of the cerebellum were accompanied by optic neuritis. There were 13 cases of extra-cerebellar tumour and of these two did not present optic neuritis. Hæmorrhages and macular changes were of common occurrence. There were 29 cases of subcortical tumour, of which a large proportion—38 per cent. or more—presented no optic neuritis and macular changes were very rare. Tumours of the pons are less frequently attended with optic neuritis but when present it is usually very intense, the explanation of its absence being probably that such tumours usually prove fatal at an early period of their development. In tumours of the optic thalamus and mid-brain optic neuritis is somewhat more frequent again, being absent in four cases out of 16, or 25 per cent. The statistics, so far as they go, indicate that the two parts of the brain where the occurrence of a tumour is least likely to set up optic neuritis are the parts which are largely or entirely composed of conducting tissues—that is, where white matter very largely preponderates over grey. The nature of the growth does not seem to be of very great importance.

LANCASHIRE ASYLUMS.

THE crowded condition of the Lancashire asylums has become a serious matter. At a meeting of the Chorlton board of guardians at the end of June the chairman, Mr. G. Macfarlane, said that owing to the congested condition of the county asylums "there was no room in any of them for the insane cases that came into their workhouse." He said that there was a crisis in regard to asylums, for other unions were in the same state as theirs,

and he moved that the clerk should write strongly to the county authorities on the matter. Miss Hertz, in seconding the proposal, said that she had seen a suicidal case now at the workhouse and it took three persons to hold the woman in bed. She disturbed the other patients and if such cases were to be kept at the workhouse a much larger staff would be required. It was resolved that in addition to the letter to the county authorities the question should be brought before the preliminary meeting of the Poor-law Conference to be held in Manchester. This was done at the meeting on June 30th to arrange the details of the annual North-Western Poor-law Conference to be held at Ulverston in September, and Mr. Macfarlane, in drawing attention at the end of the meeting to the want of provision for lunatic paupers, said that they had "some serious cases at the workhouse which we cannot get into any of the county asylums, and it does not appear that anything is being done to make further provision." Mr. Alderman Clinton, a member of the County Asylums Board, said that the Board was doing its best to provide accommodation, "but it was very difficult to keep pace with the increase of lunacy, which followed from the increase of the population of the country." The further discussion of the subject was ruled out of order, but sufficient was said, it is to be hoped, to insure its thorough discussion in September.

THE PUBLIC HOUSE TRUST ASSOCIATION.

IN THE LANCET of May 18th, 1907, p. 1373, we published an account of the aims and methods of the Public House Trust Association, which exists to discourage drunkenness and to provide good food and drink and recreation for the working classes as well as for travellers. Of these aims and methods we entertain a high opinion and it is satisfactory to note that the seventh annual report which has just been issued shows the association to have made capital progress during the year, as there are now 36 trust companies in the United Kingdom affiliated to the Central Association and 252 houses under trust management. The profits, after a deduction of 5 per cent. interest, are devoted to the public benefit, and we may instance the manner in which the surplus income of the Glasgow Trust has been allocated: "Formation of bowling green at Hallside Newton, £400; Hallside Horticultural Society prizes, £30; prizes for best kept allotment gardens, £10; Hallside cricket club, £5; Rosebank Horticultural Society, £5; Stirling brass band, £15." The report records that certain of the proposals made by a deputation of the Association to the Prime Minister have been incorporated in the Licensing Bill, but desires to see that measure greatly strengthened in its club clauses. A descriptive list of the trust houses is published and can be obtained from the secretary, 15, Dean's Yard, Westminster. We note that in future they will be distinguished by a striking and appropriate sign consisting of a conventional design of the traveller's-joy flower in a circle, around which the name of the association is written.

THE RAT CRUSADE.

THE incorporation of the Society for the Destruction of Vermin is within the recent memory of our readers, as also are the grave charges which its founders made at the time against the rats that are the chief object of their enmity. The committee of the society is anxious to establish these charges by accumulating written evidence from victims of the depredations of destructive rodents. Although it may seem a hopeless task to gather accurate information concerning the damage wrought by rats throughout the United Kingdom, the committee has prepared a schedule of questions which it hopes will be widely applied for and answered by those who are in a position, from their own experience, to give information concerning temporary or permanent rat plagues in their districts and the steps taken to prevent the mischief. Information is sought on some 20 points, including a description of the place under report; the number of persons living in it; its "rat history"; the kind of damage inflicted by rats and the approximate monetary loss caused thereby in a year; and the means employed to destroy the rats, with their cost and results. Special information is requested on the efficacy and disadvantages of poison and bacteriological preparations and also upon the results obtained by coöperative action of communities against the pest. Two supplementary papers of questions are headed "General Observations" and "Statistics." The former asks, What is the best means of destroying rats in the observer's experience; whether he is in favour of multiplying rat and sparrow clubs, and whether he is in favour of an annual grant being made by the State of, say, £10,000 in support of those and similar agencies? On the statistical sheet opinions are sought as to whether there is at least one rat to each acre of the United Kingdom and to each person in farms, villages, and towns, and as to whether the economic loss caused may be put down at one farthing per rat per day. It seems doubtful whether the answers to such leading questions as these given by persons of widely varying intelligence will serve a very useful purpose, but the other questions appear to constitute a determined and systematic attempt to settle the best means of dealing with rats, and we hope that a large number of people competent to give information on the subject will send in the schedule to the secretary of the society at 95, Wigmore-street, London, W.

A CASE OF FOREIGN BODY IN A BRONCHUS.

AN interesting case of foreign body in a bronchus leading to death from asphyxia is recorded by Mr. E. P. Minett in the *Guy's Hospital Gazette* of June 27th. The patient was a child, aged three years, who was treated at the Surrey Dispensary for broncho-pneumonia, localised chiefly on the right side of the thorax. The course of the case was of ordinary character and recovery was apparently complete except for a chronic cough. Four months later the child was taken to the out-patient department with the history that it had suddenly become blue and had had a violent attack of coughing and dyspnœa lasting for about 20 minutes. On examination no urgent symptoms were observed, but the lower and middle lobes of the right lung were dull to percussion in patches, the vocal fremitus was well marked, a few scattered râles were heard over the right lung, and a few bubbling râles at the left base. The breath sounds were increased at the right apex and were audible but of irregular character over the middle and lower lobes. On the left side the breath sounds were practically absent at the base and were heard only very faintly over the upper lobe, being markedly diminished over the left bronchus at the bifurcation of the trachea as compared with the right. A simple expectorant mixture was ordered. Two days later Mr. Minett was called to see the child, the message sent being that the child was "black in the face and quite lifeless," but on his arrival the attack of dyspnœa had passed off and the appearances were as noted before except that the pulse was rapid and irregular. About four hours later the child died. At the necropsy a small horse bean was found lodged in the trachea about a quarter of an inch above the bifurcation and at the orifice of the left bronchus there was a depressed patch of necrosis, extending down to the cartilage, which was exactly of the size of the bean. Both lungs were engorged with blood and there were small hæmorrhages on the surface of the

pleura and in the substance of the lung. There were also signs of old broncho-pneumonia on the right side. It would appear, therefore, that the bean had lodged in the left bronchus for some time but had been coughed up into the trachea during the attacks of dyspnœa, and in the last of these attacks caused death, probably from laryngeal obstruction and spasm. The case is instructive as showing that in cases of paroxysmal dyspnœa in children, especially when associated with signs of obstruction of one bronchus or local collapse, the possibility of foreign body in the bronchus should be considered. In the present case the history was misleading, owing to the broncho-pneumonic attack on the right side and the chronic cough resulting from it. It is also difficult to determine in this case when the foreign body was inhaled, since it is possible for this to occur without severe dyspnœa at the time, the urgent symptoms in such cases being usually due to laryngeal spasm when attempts are made to expel the foreign body by coughing. Cases of this nature are well worthy of publication as serving to draw attention to the possibility of the presence of foreign bodies in obscure cases of dyspnœa.

THE CAMPAIGN AGAINST MALARIA IN THE DUARS.

THE Duars are a series of valleys lying along the south base of the Eastern Himalayas in which the prominent industry is tea planting. The comfort of those engaged in the gardens, and incidentally their profits, have always suffered severely from the attacks of malaria which is very prevalent in the district. Six medical officers in charge of the health of the Duars—namely, Dr. W. Brown, Dr. O. E. McCutcheon, Dr. C. A. Stone, Dr. S. Ducat, Dr. U. A. Knyvett-Hoff, and Mr. G. E. Anderson—have accordingly collaborated in the production of a nine page folio pamphlet bearing the title "Practical Methods of Anti-Malarial Sanitation," intended for distribution amongst the residents of their district. A copy of this pamphlet has been forwarded to us and it constitutes an admirable summary of the present-day methods of dealing with malaria in accordance with principles resting upon established facts. Although there is nothing new in them to a medical reader the statements are so clearly set out as to appeal convincingly to any intelligent planter. They first speak of the agency of the mosquito in spreading the disease and then consider the methods of meeting it under the five heads of (*a*) destruction of the parasites; (*b*) destruction of the mosquitoes which carry the parasites; (*c*) protection of human beings against mosquito bites; (*d*) separation of infected persons from uninfected; and (*e*) warding off of the bad effects of mosquito bites. Under (*a*) and (*e*) the question of quinine is fully considered, daily prophylactic doses of five grains being strongly advised. The writers insist on the necessity of similar treatment for the natives at the hands of a "trustworthy doctor babu" acting under the supervision of the European medical officer. Under (*c*) the question of adequate mosquito screens and nets is considered, and (*d*) enjoins the segregation of coolies in their own lines and, if possible, separation of garden-born coolies from workers imported from the hills who are found to be more susceptible to malaria. But the most important place in prophylaxis is given to coöperative activity in destroying mosquitoes in their breeding-places by clearing jungle, draining and filling up pools, and spraying kerosene oil in selected places. Full practical details are given as to all these measures and the economic advantage of spending money upon them is pointed out. It is instructive to reflect that the success of the measures which the medical officers have so much at heart must lead inevitably to their own "economic disadvantage" and the reading of this pamphlet may well serve to remind some enemy of its writers' calling that, like charity, medicine "is kind, rejoiceth in the truth, and seeketh not her own," and so has a perhaps unequalled claim to the dignity of a liberal profession.

THE VALUE AND USE OF MORPHINE IN CANINE SURGERY.

WE have received a reprint of a paper published by Professor F. Hobday, F.R.C.V.S., in the *Veterinary Journal* for May last pointing out the value of morphine in operations upon dogs and for the relief of pain in that animal. It is well known that different species of animals react differently to morphine—e.g., whereas in the cat it produces delirium, in the dog it leads to a rapid and profound narcosis, although even in medicinal doses it produces vomiting and purging. Professor Hobday emphasises the value of morphine in dogs for relieving pain, keeping the animal quiet for manipulative procedures such as the setting of fractures, or performance of minor operations. Even severe operations may be performed under its action if some local anæsthetic such as cocaine, novocaine, eudrenine, or codrenine be given, and it may obviate the necessity for the administration of chloroform which is dangerous in the hands of an inexperienced assistant, such as a groom or other servant, upon whom the veterinary operator frequently has to rely. It also is of value in enabling the examination of a vicious dog to be carried out more thoroughly and in the case of fractures is not only helpful during the actual application of the plaster or other fixative but also allows time for it to set. Professor Hobday quotes a number of cases illustrating the value of the drug in the treatment of canine patients. The dose recommended is 1-16th of a grain per pound of body weight, but this dose can be exceeded with perfect safety; indeed, although morphine is toxic to dogs, Professor Hobday states that the insusceptibility of the dog to even large doses is remarkable, and he gives instances where large doses have been given for the purpose of painlessly killing dogs without success—e.g., he refers to a dose of 20 grains given to a pug dog aged seven months, weighing 8 pounds, suffering from follicular mange, without producing a fatal result after 48 hours. He states that in ordinary cases a condition of stupor is produced about half an hour after an ordinary dose, and that in this stage a fractured leg may be attended to, but that if a surgical operation involving the use of the knife is required a further period of a quarter of an hour is advisable. After a dose of ordinary size the animal recovers sufficiently to walk about and to take food in about twelve hours. It should be remembered, however, that some dogs possess an idiosyncrasy in regard to morphine, and in such animals delirium or rapid breathing may result.

LONDON TRAFFIC.

Sir John Whittaker Ellis in a recent letter to the *Times* called fresh attention to the great increase in danger and discomfort to the public which the multiplication of motor vehicles in the streets of London has entailed. He was careful to explain that his object was in no way to injure the motor vehicle but rather to assist it. The chief means which he proposes for this end are the creation of new roads to be paid for by an increased tax on motor vehicles, and he demands that the recommendations of the Royal Commission on London Traffic, which reported as long ago as 1905, should be carried out and that a competent and supreme authority should be appointed for its regulation. He suggests that this should consist of two bodies, the one being a tribunal of paid commissioners to examine schemes for the improvement and construction of streets, and to report annually to Parliament, the other being a magisterial board

to deal forthwith with the vehicular users of the roads and streets, each body to have the coöperation of local municipal authorities and of the police force. Sir J. Whittaker Ellis has sent us a circular letter inclosing a report of a question asked by Sir Henry Craik in the House of Commons on March 24th as to what statutory restrictions are put upon motor omnibuses with regard to the amount of smell, noise, and vibration which they cause, with Mr. Gladstone's reply that "some check as to unnecessary smell and noise is afforded by regulations of the Commissioner of Police as to the conditions to be fulfilled before a licence is granted." We agree from a prolonged experience of a very busy thoroughfare that the noise of these vehicles is a well-nigh intolerable nuisance. It has been proved that a comparatively silent motor-omnibus can be made, and it is to be hoped that in issuing new licences the police will take full advantage of their powers; there are, moreover, too many omnibuses now running which ought to be condemned. On the broader question which Sir J. Whittaker Ellis raises, we should welcome the institution of a traffic authority, though we feel constrained to repeat the words which we used when such a board was first proposed that "when it comes into existence it will find itself confronted with a task in comparison with which the labours of Sisyphus may be regarded as mere diversion."[1] We then gave it as our opinion that the decentralisation of the hives of industry into healthier and more open surroundings seemed to offer the best solution for thinning the London traffic. The construction of new streets to accommodate motor traffic on any large scale in the central districts is, we fear, a visionary proceeding, although, of course, in planning new suburbs such special roads might prove practicable. In the meantime there is no doubt that to cross the London streets at the present day requires more alertness and entails greater danger to life and limb than ever before, and in busy thoroughfares an elderly person may be forced to wait for several minutes before seeing a chance of a secure transit. The immediate remedy, as we have suggested recently, would seem to rest in the provision of more "islands" of refuge, although in narrow streets such as parts of the Strand, where the traffic is often well-nigh continuous, it would be difficult to spare road space for their construction.

TRAUMATIC INSUFFICIENCY OF THE MITRAL VALVE.

TRAUMATIC valvular disease of the heart is very rare; indeed, in a recent work on the "Medical Aspects of Insurance" Professor Grober of the University of Jena has stated that valvular disease of the heart is never the direct result of injury. However, a few well-authenticated cases have been recorded. In consequence of recent legislation which increases the liability of employers for accidents to their workmen the subject has a special interest just now. At a meeting of the Société Médicale des Hôpitaux of Paris on May 29th M. Claisse and M. Socquet reported the following case which shows dramatically the possibility of valvular disease being produced by injury. A mason, aged 48 years, was admitted into La Pitié Hospital on Feb. 7th last with dyspnœa and œdema of the lower limbs. His illness began suddenly on Oct. 24th, 1907, after a violent effort. He was cementing a large block of stone weighing about 100 kilogrammes, which slipped from its place. He endeavoured to stop it with his arms and allowed it to slip on to his chest. He made a violent effort for some seconds to hold it up and, unable to do so, allowed it to fall. At the time of the greatest effort he felt a tearing pain in the præcordial region which was immediately accompanied by intense dyspnœa. With difficulty he returned home and from that time was unable to work and suffered constantly from cardiac failure (*hypo-systolic*) with slight variations. During the last fortnight before admission especially his legs swelled and he suffered constantly from dyspnœa. On admission he sat up in a state of great dyspnœa. His face was cyanosed, his conjunctivæ were subicteric, and the veins of his neck were prominent. There was considerable œdema of the lower limbs which extended to the penis and scrotum and even as high as the thorax. The cardiac apex was lowered and displaced to the left. Percussion showed great cardiac dilatation. A loud mitral systolic murmur of puling musical timbre occupied almost the whole of the systolic period and was propagated to the axilla and back. Over the aortic orifice the second sound was a little harsh. The blood pressure was from 130 to 140 millimetres of mercury and the pulse was 90, small, and irregular. The abdomen was distended with fluid. The liver descended six fingers' breadth below the ribs and was painful and hard. Pressure upon the liver produced a reflux in the jugular veins. At the posterior inferior portion of the right chest there were signs of fluid and puncture yielded sero-fibrinous fluid with the cytological formula of cardiac pleurisy—a few polynuclears, a small number of lymphocytes, and many endothelial plates. From 300 to 500 grammes of high-coloured urine were passed in the 24 hours. It contained albumin. There was no history of rheumatic fever or syphilis. Digital's and theobromine were given without effect. The dyspnœa was always intense. The œdema increased so much that the skin broke at a spot on the external surface of the left thigh, whence a large quantity of liquid was discharged. The right lower limb became cold and cyanosed and the violet colour of gangrene appeared on the foot and ankle. Later an erosion appeared on the external surface of the thigh from which a patch of gangrene rapidly extended. From this place a large quantity of rose-coloured fluid was discharged. In the meantime the patient became definitely jaundiced; the urine gave Gmelin's reaction but the stools remained coloured. Diffuse sonorous râles appeared in the chest and death occurred on March 2nd. The necropsy showed a quantity of serous fluid in the abdominal and right pleural cavities. The lungs were œdematous. There was complete union between the visceral and parietal layers of pericardium but the adhesions appeared to be recent and were easily broken down. The heart was dilated—16 centimetres broad and 14 long. It weighed 635 grammes and contained abundant clots. The left ventricle was hypertrophied and dilated. The mitral valves were sound but the posterior pillar was broken and retracted. The upper fragment floated suspended by the chordæ tendineæ. It looked like a stump partly cicatrised. In the lower part of the ventricular wall were traces of the tearing away of the pillar—a large granular and hæmorrhagic patch. The neighbouring part of the pericardium showed fatty degeneration. The liver was large. The spleen was large and hard. The kidneys were congested but the cortex appeared sound.

[1] THE LANCET, Nov. 25th, 1905, p. 1558.

THE END OF THE INSTITUTE OF MEDICAL SCIENCES.

AT the meeting of the Royal Commissioners for the Exhibition of 1851, held under the chairmanship of the Prince of Wales on July 10th, His Royal Highness, in introducing the annual report, expressed his regrets that the University of London had decided to abandon the scheme for erecting and supporting an Institute of Medical Sciences. The site, he said, will now be added to that already allocated by the Commissioners to the College of

Science and Technology. And so there comes to an end the only practical move which has yet been made by the University of London towards the consolidation of medical teaching which those who have thought most and most impartially about the subject believe to be absolutely necessary if the London medical student is to obtain a medical degree upon reasonable terms.

THE FUNCTIONS OF FUNGI.

THERE seems to be little doubt that certain, if not all, species of fungi possess the power of assimilating nitrogen from the atmosphere and some day it may happen that the fungus farm will form the basis of a new industry. The mushroom is, perhaps, the most familiar form of a fungus and it is well known that although it contains a considerable quantity of moisture yet the dry matter consists largely of nitrogenous substances. Again, the poisonous fungi appear to owe their toxic properties to the presence of alkaloids which, of course, are nitrogenous bases. On the nature of the metabolic process in the fungus depends, probably, whether the nitrogen ultimately resolves into a poisonous or non-poisonous substance. This at any rate serves as a scientific differentiation of poisonous from non-poisonous fungi. Another interesting example of a poisonous fungus which attaches itself to cereals is ergot which is, of course, a powerful drug in medicine, its value residing in its contracting effects on the arterioles. The active principles of ergot are well known to be alkaloidal in character. There is also an instance in which it has been found that the fixation of free atmospheric nitrogen by the grass known as lolium temulentum, or darnel, is due to the fungus which infests it. This grass, it is interesting to note, has no symbiotic root organisms, so that its power to assimilate free nitrogen must be traced to other parts of the plant. If no combined nitrogen is given in the food the amount of nitrogen in the plants without the fungus is the same as in the seeds, but in the plants with the fungus it is approximately double. It is just possible that it is this action of the parasitic fungus which gives to darnel its poisonous properties. The favourite place of growth of darnel is amongst wheat, and occasionally it has happened that the seeds have been mixed and ground with the wheat in the preparation of flour, and alarming poisonous symptoms have followed the consumption of bread containing these seeds. This power of assimilating atmospheric nitrogen which appears to be possessed by most fungi is of the greatest possible interest and a further study of the subject is certain to yield results of both theoretical and practical importance. The fact that one fungus according to its peculiar metabolism can turn nitrogen into a poison and that another fungus can turn that same element into a food in itself is sufficient to show the desirability of investigation with the view of discovering exactly how such opposite results are brought about.

"BARNSBURY BABIES."

AN article under this heading, by Mrs. Frances Campbell, appeared in the *Westminster Gazette* of July 10th in support of the Gifford-street Foster Homes Society which we do not doubt does excellent work amongst slum-bred children. But whilst sympathising with the aims of the society we feel constrained to support a protest which appeared in the next day's issue of the same newspaper from Dr. J. Alison Glover. Dr. J. A. Glover exposed fully the sentimentality with which Mrs. Campbell's article was infused and reproached her for the blasting of the reputation of "a district as large as Stockton-upon-Tees for the sake of obtaining a few pounds for a worthy but admittedly small charity." Mrs. Campbell supported her appeal *ad misericordiam* by the hysterical utterances of an American "expert" sent to Europe by his Government to study certain conditions of lower-class life. The "world-famous" gentleman (for so Mrs. Campbell thinks he is), who prefaces his remarks with "Wall, I guess," had gazed at the Barnsbury babies and had been so harrowed by the spectacle that he could not sleep o' nights, the reason being, according to Mrs. Campbell, that the only place in London which can hold a candle to Barnsbury for "sordid grime and despair" and cruelty to its little ones is a region in Battersea with the picturesque title of "Little Hell." We are pleased to see Dr. J. A. Glover, a medical man working in North London, and familiar in a way that the "world-famous" American could not be with the economics of the situation, refuting this gratuitous attack upon Barnsbury. Doubtless the district is, as Dr. J. A. Glover says, "a poor and crowded neighbourhood," but he adds, and we wholly concur with him, that it "maintains its health in a way which does credit to the motherhood of its humble citizens and to the essential soundness of its sanitary administration." Dr. J. A. Glover supports his contention with figures comparing the infantile death-rate of Barnsbury with those of various American cities, figures which the distinguished reformer from across the Atlantic may find somewhat difficult of digestion.

A LESSON IN THE USE OF ANIMAL EXPERIMENT.

THOSE who are anxious to see for themselves the manner in which the Research Defence Society is setting about its task of educating the public may profitably expend 3*d.* upon one of its earliest pamphlets, entitled "The Extinction of Malta Fever,"[1] which has been written for the society by Colonel Sir David Bruce who was the chairman of the late Mediterranean Fever Commission of the Royal Society; and when it has been read it may be handed on with advantage to any antivivisectionist who may be suspected of being open to conversion by a plain statement of an overwhelming case. Colonel Bruce, in driving home his arguments, relies upon neither cauistry nor sentiment but upon the unanswerable logic of facts. These facts we need hardly rehearse as they have only recently been put before our readers in the Milroy lectures. We may say, however, that Colonel Bruce, who attributes the discovery of the specific micro-organism with some modesty to "an army medical officer," tells in non-technical language the way in which by repeated experiments the spread of the disease in Malta was laid to the score of the milch-goats. The charts showing graphically the incidence of Malta fever on the island in 1905 and 1907, in which years there were 643 and seven cases respectively, might almost convince anyone that the blotting out of 75,000 days of illness annually, and the consequent increase of efficiency amongst an important British garrison, make up a sufficient justification for experimental methods.

[1] "The Extinction of Malta Fever" (A Lesson in the Use of Animal Experiment). By Colonel David Bruce, R.A.M.C., C.B., M.B., D.Sc., LL.D., F.R.S. London: Macmillan and Co. 1908. Pp. 20. Price 3d. net.

THE EXETER CITY COUNCIL.—The report of the asylum committee of the Exeter city council, which was presented at its last meeting, shows that on Dec. 31st, 1907, the institution contained 371 patients (169 males and 202 females). During 1907, 39 deaths occurred and 82 patients were discharged. As a result of the favourable working of the asylum the sum of £1610 has been paid to the borough fund. It is proposed to provide additional accommodation in the institution for 52 female patients.

THE CANCER RESEARCH FUND.

THE annual general meeting of the Imperial Cancer Research Fund was held on July 14th at the Royal College of Surgeons of England. In the unavoidable absence of the Prince of Wales the Duke of Bedford took the chair, and among those present were Sir Richard Douglas Powell (President of the Royal College of Physicians of London), Mr. Henry Morris (President of the Royal College of Surgeons of England), Mr. John Lentaigne (President of the Royal College of Surgeons in Ireland), Sir Julius Wernher, Sir William S. Church, Sir Charles Morrison-Bell, Sir John Tweedy, Sir John McFadyean, Sir Hugh Bell, Admiral Henderson, Sir George Mackenzie, Mr. H. T. Butlin, Dr. P. H. Pye-Smith, Sir Henry G. Howse, Sir Thomas Smith, Dr. T. T. Whipham, Sir W. Watson Cheyne, and Mr. Edmund Owen.

Sir WILLIAM CHURCH, chairman of the executive committee, presented the annual report in the following terms:—

In rising to propose the reception and adoption of the annual report which is now in your hands there is no need for me to address you at any length. In it a short statement is given by the secretary of the general working of the Fund and by the treasurer of its financial position. The report of the general superintendent furnishes a brief account of the scientific work which has been carried out in our laboratory. The various portions of our work have been continued during the past year in accordance with the plan pursued in previous years, of which full details will be presented to you in the third scientific report shortly to be published. As our second scientific report appeared in 1905 three years have elapsed since its publication, but much of the substance of the report has been from time to time communicated to the Royal and other scientific societies, there being no desire on the part of this Fund to keep back any results which may have been obtained that might be of service to other workers in the same field. In one important respect the report differs from its predecessors. As our work has proceeded it has been found advantageous for special investigations to be dealt with separately, and that different members of our staff should undertake, under the general directions of the superintendent, these special investigations. Consequently, the forthcoming volume takes the form of separate papers, 17 in all, with the names of those of our staff who are mainly responsible for their contents attached to them.

I cannot attempt to touch on all the features of general interest in these various papers; short summaries of some of them have been given in our annual reports, but I may venture to draw your attention to some of the more important of them. Dr. Bashford in his essay on the Ethnological Distribution of Cancer shows how fallacious are the ordinary returns of the mortality from cancer as indicating the actual prevalence of the disease, the number of deaths assigned to cancer increasing in proportion to the accuracy of the vital statistics of a country; for example, it was not infrequently asserted a few years ago that cancer was practically unknown in India and Egypt and also among uncivilised races of men. Since this Fund has been collecting statistics we have already obtained upwards of 2000 cases of well-authenticated cancer from hospitals in India and 297 instances from the government hospitals of Egypt. Very interesting information has also been received of the occurrence of cancer from Ceylon, Cashmir, British New Guinea, and other widely separated portions of the globe. Special habits and customs in some of the less civilised communities appear to have an influence in determining the occurrence of cancer in particular parts of the body which are not commonly affected in Europeans.

Instances of the occurrence of the disease in domestic and wild animals have been collected and examples are found in every division of the vertebrate kingdom except reptiles. Dr. Gierke, Dr. Haaland, and Dr. Murray have studied with great care and exactness the histological structure of malignant new growths in mice; their observations show that the experimental method enables us to study the life history and biological behaviour of tumours over prolonged intervals of time, as well as their mere histological structure, and compare the behaviour of cancer in mice with the clinical features we meet with in man. The experimental study of cancer is based on the fact that carcinomatous and sarcomatous cells implanted into healthy rats or mice give rise to tumours characterised by the same powers of infiltrative growth into the surrounding tissues, and with the same tendency to dissemination throughout the body, as occurs in spontaneous cancer. Numerous observations prove that the lesions of spontaneous cancer can be reproduced experimentally and can be studied at leisure. Variations in the growth and development of inoculated cancer appear to depend to a certain extent on small differences in the methods of inoculation, whilst the important features are found to be alike in spontaneous and in inoculated tumours.

I should like to draw particular attention to the clinical study of spontaneous cancer occurring in mice, for it shows that the course of the disease is closely parallel to that which obtains in man. The presence of malignant disease, whether spontaneous or induced, does not at first interfere with the general nutrition; the weight of a mouse suffering from spontaneous or induced cancer generally increases slowly with the growth of the tumour. It is only in the later stages, when hæmorrhage or ulceration has occurred, that diminution in weight takes place and the animal seldom lives for more than two weeks after loss of weight has commenced. In mice, as in man, removal of a malignant growth is followed for a longer or shorter period by apparent recovery and the loss of weight following the removal of the tumour is regained. Recurrence of the disease at varying intervals very frequently takes place; in some mice as long a period of time as 16 weeks, a not inconsiderable period in the life of a mouse, has been noticed to elapse between the operation and the reappearance of the disease. Repeated observations have also shown that metastases in the lungs and other portions of the body are met with as frequently in animals that have not been operated on as in those in which the primary tumour has been extirpated, a fact which lends no information to the supposition that operation favours the occurrence of metastasis.

None of the experimental work carried on presents features of greater interest or possibly of greater value than that in connexion with the natural and induced resistance of mice to the growth of cancer. An examination of the difference of the processes that take place at the site of implanted grafts into normal and immune animals respectively appears to show that the failure of the implanted grafts to develop themselves depends on the non-penetration of the graft by the tissues of the host and retrograde changes take place in it for want of nutrition. Why this occurs is still a matter of speculation; no explanation has yet been suggested which appears to me to offer sufficiently strong grounds for general acceptance. In connexion with the subject of immunity it has been found that whilst the absorption of normal mouse tissue appears to confer on mice a certain amount of immunity, the absorption of special tissues appears to confer on them a greater power of resistance to special forms of cancer—e.g., the absorption of normal skin appears to confer almost complete immunity to squamous-celled carcinoma and the absorption of tumour tissue confers greater powers of resistance to the inoculation of growths of similar character than it does to that of tumours which differ from it in histological structure.

In conclusion, I should like, as chairman of the executive committee, to express the high appreciation they have of the zest and untiring patience with which the work of the Fund is carried out by the superintendent and his assistants. Few except those connected with the work can form an idea of the amount of monotonous labour entailed in daily observing the many thousand animals under experimentation and in accurately recording the results of such observations. The executive committee fully recognise their services and on behalf of the Royal Colleges thank them for the manner in which the research is carried on.

Mr. BUTLIN, in seconding the adoption of the report, showed that the result of the investigations of the Cancer Research Fund had been to confirm the modern clinical views as to the treatment of malignant disease, and added that while all men were eagerly looking for the discovery of an antidote the labour and money being expended upon research were in the meantime resulting in great benefit to the public.

Sir WILLIAM CHURCH having conveyed to the meeting the

Prince of Wales's approval the report was adopted unanimously.

The Duke of BEDFORD moved a vote of thanks to the executive of the Fund, which was seconded by

Sir JOHN TWEEDY who associated himself with the remarks of Mr. Butlin, that the Research Fund was already influencing practice in the treatment of cancer for good, and that already thousands of lives had been saved by the better and surer knowledge of the nature and origin of cancer.

The motion was unanimously adopted.

Sir R. DOUGLAS POWELL next moved that Prince Francis of Teck, the Duke of Bedford, and the Knight of Kerry should be appointed vice-presidents.

Sir W. WATSON CHEYNE seconded the motion which was carried unanimously.

After certain appointments to the general committee had been made Sir JULIUS WERNER proposed a vote of thanks to the Duke of Bedford for presiding, and Mr. JOHN LENTAIGNE, in seconding, said that experimental investigation was the only real method by which they could hope for success in fighting cancer.

The motion was carried with acclamation and the proceedings terminated with a few words of acknowledgment from the Duke of Bedford.

LYNN THOMAS AND SKYRME FUND.

THE following subscriptions have been received between June 20th and July 3rd by Mr. William Sheen, M.S. Lond., F.R.C.S. Eng. (2, St. Andrew's-crescent, Cardiff), honorary secretary to the fund.

Subscribers of Ten Guineas.

Sydenham District Medical Society, per H. Hetley.

Subscribers of Five Guineas.

Cape of Good Hope Western Branch of the British Medical Association, per H. A. Moffat.

Subscribers of Four Pounds Eight Shillings.

Furness Division of the British Medical Association, per John Livingston, the amount being made up as follows:—

Half-a-Guinea from—

R. H. Beardsley, Grange-over-Sands.

Five Shillings from—

R. Lowther, Grange-over-Sands.

Half-a-Crown from—

R. Allan.
George Alexander.
Douglas H. Anderson.
R. Ashburner.
P. L. Booth.
R. O. Bowman.
A. Carmichael.
J. B. Carter.
J. Cockton.
R. Coffey.
A. W. Collins.
A. J. Cross.
F. E. Daniel.
T. F. Forster.
R. H. Fothergill.
R. A. J. Harper.
John Livingston.
James Milligan.
John Murray.
G. Parsons.
E. B. Pooley.
J. A. Reed.
A. F. Rutherford.
W. Sansom.
John Settle.
William Sinclair.
A. E. Thompson.
J. T. Williams.
J. F. Wilson.

Subscribers of Four Pounds, Seven Shillings and Sixpence.

Glasgow Eastern Division of the British Medical Association, per John Patrick, the amount being made up as follows:—

Five Shillings from—

T. C. Barras.
William Bryce.
William Buchanan.
A. Davidson.
James Dunlop.
Andrew Granger.
John Granger.
John Muir.
W. L. Muir.
Alex. Munro.
W. A. Parker.
John Patrick.
William Patrick.
Joseph Scanlan.
Robert Scot.
M. Semple.
R. Service.

Half-a-Crown from—

William Whitelaw, Glasgow.

Subscribers of Four Pounds.

Ilford Medical Society, per A. Welply.

Subscribers of Three Guineas.

St. Helens Medical Society, per D. C. L. Orton.

Subscribers of Two Guineas.

Birkenhead Medical Society, per A. G. Milne.
R. H. Kinsey, Bedford.
Burma Branch of the British Medical Association, per H. A. Williams.

Subscribers of One Guinea.

J. H. Blight, Chesterfield.
Charles J. Heath, London.
C. P. Parry, Carmarthen.
H. A. Scholberg, Cardiff.

Subscribers of Fifteen Shillings.

Border Branch of the South-Eastern Counties Division of the British Medical Association, per John Jeffrey.

Subscribers of Half-a-Guinea.

William Young Martin, Walkden, near Manchester.

Subscribers of Five Shillings.

D. R. Evans, Clwtybont, Carnarvonshire.
M. Stack, Liverpool.

Subscribers of Half-a-Crown.

J. Morgan, Pontrhyd-y-Groes.

The gross amount now received is about £1650, and except for colonial and outstanding subscriptions the fund will be closed on July 31st.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE QUESTION OF THE ADMISSION OF WOMEN TO THE EXAMINATIONS OF THE COLLEGE.—ELECTION OF PRESIDENT AND VICE-PRESIDENTS.

A QUARTERLY meeting of the Council was held on July 9th, Mr. HENRY MORRIS, the President, being in the chair.

The PRESIDENT reported the result of the election of members of Council, as already published in THE LANCET of July 11th, and he stated that as Mr. Lockwood obtained an equal number of votes with Mr. Haslam, but was junior to him on the Roll of Fellows, Mr. Lockwood would become substitute member of Council for Mr. Howard Marsh.

Mr. A. Pearce Gould, Mr. W. F. Haslam, Mr. W. Arbuthnot Lane, and Mr. C. B. Lockwood were introduced and made declarations in the terms of the oath prescribed by the charter of 1800 and took their seats as members of Council.

Mr. Haslam was readmitted a member of the Court of Examiners.

Mr. H. Pottinger Keatinge of Cairo was introduced, and after signing the by-laws and making the required declaration was admitted a Fellow of the College.

The PRESIDENT stated that the vacant examinership in physiology caused by the death of Dr. Bertram L. Abrahams would be filled up at the quarterly Council in October.

The best thanks of the Council were given to Colonel C. E. Shepherd for presenting to the College a collection of otoliths.

In accordance with the recommendations of the Museum Committee it was resolved that the conservator should be authorised to proceed with a system of labelling showing the contents of each case and shelf in the Museum, and that he should prepare a synopsis of the contents of the Museum with a view to its being published in pamphlet form as a guide.

In accordance with the recommendation of the Museum Committee it was resolved to adopt the card system in the cataloguing of the Museum.

The SECRETARY reported the completion of the arrangements for assigning the lease of the Examination Hall buildings.

The Council removed from the list of Members the name of a Member whose name had previously been removed from the Medical Register.

The report on the poll of Fellows and Members on the question of the admission of women to the examinations of the College was received. It was as follows:—

In reply to the Question A:—

In your opinion is it desirable that women should be admitted by examination as Members of the College?

Fellows voting No	375
Members voting No	4558—4933
Fellows voting Yes	663
Members voting Yes	3855—4518
Majority against	415

In reply to the Question B:—

In your opinion is it desirable that women after admission to the Membership should be admitted by examination as Fellows of the College?

Fellows voting No	500
Members voting No	4739—5239
Fellows voting Yes	534
Members voting Yes	3523—4057
Majority against	1182

Note.—97 Members answered "Yes" to Questions A and B, adding "with full Collegiate rights." As these replies were not direct answers to the questions submitted by the Council they have not been included in the table of results. Four Members answered "Yes, with full Collegiate rights" to Question A, "No" to Question B. Their answers to Question A have not been included. In addition to the answers tabulated under Question B, answers in the form of "Yes" to this question were received from three Fellows and 138 Members who answered "No" to Question A. It is presumed that in such cases the signatories mean that while they do not desire women to be admitted to the Membership they think that if women are so admitted the Fellowship should be open to them also.

In the poll of the Fellows there was a majority of 288 in favour of admission to the Membership and of 34 in favour of admission to the Fellowship. In the poll of the Members there was a majority of 703 against the admission of women to the Membership and of 1216 against their admission to the Fellowship. To the Fellows 1373 circulars were sent out and 329 were unanswered. To the Members 13,812 circulars were sent out and 5068 were unanswered. The consideration of the results of the poll of Fellows and Members was deferred to the October meeting.

The PRESIDENT, on behalf of himself and the Vice-Presidents, submitted a copy of a letter addressed by them to Sir Henry A. Pitman, in pursuance of the wish of the Council as expressed at its last meeting.

The PRESIDENT reported that on behalf of the Council he had sent a telegram of congratulation to Professor Kosinsky, honorary Fellow of the College, on the occasion of the celebration at Warsaw on June 30th of the fiftieth year of his doctorate.

The following appointments were made:—Hunterian professors: Arthur Keith, six lectures; Samuel George Shattock, two lectures; William Wright, three lectures; and Cecil W. Rowntree, one lecture. Arris and Gale lecturer: Grafton Elliot Smith. Erasmus Wilson lecturer: S. G. Shattock.

It was resolved that six lectures on Advanced Surgical Pathology should be given by Dr. Arthur Keith, the conservator of the Museum, and that three should be given by Mr. S. G. Shattock, the pathological curator, in addition to the three given by him as Erasmus Wilson lecturer.

Mr. Henry Morris was re-elected President for the third time. Sir W. Watson Cheyne and Mr. A. Pearce Gould were elected Vice-Presidents.

A letter was read from the secretary to the delegates of the Oxford University Museum, stating that it is proposed to celebrate the fiftieth year of the museum on Thursday, Oct. 8th, and that the delegates invite the College to send a representative on that occasion. The President was appointed to represent the College.

A letter was read from the secretary of the National League for Physical Education and Improvement, stating that the League had lately formed a committee to consider the whole question of physical training in the United Kingdom, the necessary standard to be attained, and the method of certification to be adopted; that the general committee had arranged for a working subcommittee of a thoroughly representative character, and inviting the Council of the College to appoint a representative on the subcommittee. Mr. Edmund Owen was appointed.

The next ordinary meeting of the Council will be held on Thursday, July 30th.

ASYLUM REPORTS.

Kent County Asylum, Barming Heath (Annual Report for the year 1907).—The recovery rate at this asylum in 1907 was a high one, being 41·4 per cent. on the total number of admissions and 44·2 per cent. on the direct admissions only. Of 171 recoveries 126 were under treatment for periods of less than 12 months. The death-rate was 11·2 per cent. and was lower than in the previous year. Dr. H. Wolseley-Lewis publishes an interesting retrospect of the asylum, contrasting its original prison-like construction, its massive stone walls, its narrow stone staircases, low vaulted ceilings, and rows of dark dungeon-like cells with its present light, spacious, and airy accommodation. As illustrative of the barbarous methods of earlier times Dr. Wolseley-Lewis describes the "surprise bath" which was built in 1844. "It was reserved for the very violent patients, over whose head was placed a hood, and round whose waist a girdle with rope attached was fastened; they were then led by a side door to this bath of cold water, into which they were unexpectedly plunged." Appended to the report are the voluminous registers and tables as arranged under the new scheme of the Medico-Psychological Association. Whatever their value may turn out to be it is plain that their compilation must involve an enormous amount of work.

Monmouthshire Asylum (Report for the year ending March 31st, 1908).—The total number under treatment for the year was 1166. The recovery-rate for the year calculated on the total number of admissions, after excluding transfers from other asylums, was 38·8 per cent. This is the highest recovery-rate since 1902. The death-rate, calculated on the average number resident, was 8·7 per cent. Dr. J. Glendinning points out that the number of female patients who died in this asylum during the past five years from pulmonary tuberculosis was nearly double the number of males. He accounts for this marked disproportion in the two sexes by the fact that the men spend more time out of doors than do the women, a large proportion of the former being at work on the farm and at other outdoor occupations.

MEDICINE AND THE LAW.

American Decisions on the Rights and Liabilities of Medical Men.

Although the decisions of the American courts are naturally not binding on the judges of our courts, yet the decisions are frequently cited when our law is silent on the subject, and more often than not followed. Therefore it is proposed to refer briefly to a few of the more important recent decisions relating to medical men, which might perhaps be of service in bringing or defending an action in this country. Where a patient desires a medical man to perform an operation and unexpected conditions are discovered in the course of the operation, or where an emergency arises calling for immediate action for the preservation of the life or health of the patient and it is impracticable to obtain his consent or the consent of anyone authorised to speak for him, it is the duty of the medical man to perform such operation as good surgery demands, without such consent. A husband placed his wife in a sanatorium for treatment. The physician in charge told him that a proposed operation on her would be a trifling one. The husband was willing that the physician should do anything that he thought necessary, but he requested that he should do as little as possible. The physician told the husband that two operations might be necessary. Following the conversation the physician performed an operation, and the wife left the sanatorium. She subsequently returned and the physician performed a second operation. It was held that the authority given by the husband to the physician to perform an operation was exhausted when the first operation was performed, and that the second operation was performed without consent. Where a patient is in possession of his faculties and in such physical health as to be able to consult about his condition, and where no emergency exists making it impracticable to confer with him, his consent is a pre-requisite to a surgical operation by his physician (Pratt *v.* Davis, 79 N. E. 562). In an action against a physician and surgeon for negligent treatment and want of ordinary care, where it appears that he attended a patient suffering from hip disease, and called another physician of experience in consultation, and they arrive at the conclusion that the thigh is dislocated and set the same, and place it in a plaster cast and visit the patient continuously until he moves away from the city, using every precaution, but the treatment is not successful, the evidence does not show want of diligence or ordinary skill, and the surgeon is not responsible for want of success (Champion *v.* Kieth, 87 P. 845). Where one was injured on the street by an accident rendering him unconscious, and while he was in such condition surgeons summoned by a spectator attended and performed an operation on him in an endeavour to save his life, there is a quasi contract on his part to pay a reasonable compensation for the services (Cotnam *v.* Wisdom, 104 S.W. 164). Where the general manager of a corporation, on one of its employees being injured, directed an employee to call a surgeon, and placed the injured employee under such surgeon's care, and did not countermand the first employment, though he knew the surgeon was continuing to attend his employee, there was an employment of the surgeon as to his entire services (Freeman *v.* Junge Baking Co.,

103 S.W. 565). The care and skill required by a physician in treating a patient are not "his best skill and ability," but he must use that care and skill which are exercised generally by physicians of ordinary care and skill in similar communities (Dorris *v.* Warford, 100 S.W. 312). A physician entitled to practise his profession, possessing the requisite qualifications and applying his skill and judgment with due care, is not ordinarily liable for damages consequent upon an honest mistake or an error of judgment in making a diagnosis, in prescribing treatment, or in determining upon an operation, where there is reasonable doubt as to the nature of the physical conditions involved, or as to what should have been done in accordance with recognised authority and good current practice (Stalock *v.* Holms, 111 N.W. 264). Evidence that an operation was absolutely necessary "on the chance" to save the life of the patient, and that the patient was operated on as claimed warrants an inference of a request on the part of the patient to have the operation performed, with an understanding that a reasonable compensation would be paid therefor (Pryor *v.* Milburn, 101 N.Y. S. 34). Evidence of defendant's wealth, as an element to be considered in measuring the value of a physician's services, is inadmissible where it is not in rebuttal of evidence from the other side attempting to show the custom of a lower standard. In an action by a physician to recover on an implied contract of a father to pay for services rendered to his son, where the physician knew of the financial standing of the father and son, evidence that the son was a man of considerable fortune and amply able to pay for the services is admissible on the question whether the physician thought the father intended to pay for the services which he called him to perform. Evidence of a physician's learning and skill is competent to be shown in estimating the value of his services (Morrell *v.* Lawrence, 101 S.W. 571).

Looking Back.

FROM

THE LANCET, *SATURDAY*, July 17th, 1830.

His late Majesty, who possessed a larger share of knowledge in medicine than usually falls to the lot of well-educated gentlemen, had, for a long time, expressed his apprehensions that the cause of his death would arise one day from some dropsical effusion, or from the immediate effects of a revulsion or translation of the gout from the extremities to the heart. The fears which, for so long a period, had disturbed his Majesty's repose, were much heightened on the demise of his brother, the late Duke of YORK. His Majesty being well acquainted with the nature of the Royal Duke's disease, and judging from certain coincident peculiarities that there was a considerable resemblance between his brother's constitution and his own, became exceedingly alarmed, and immediately consulted Sir ASTLEY COOPER, in order to ascertain whether any indications of dropsy were to be found in his person. The KING entertained the highest possible opinion of the worthy Baronet's skill, and it was by his especial command that Sir Astley had attended the Duke of YORK during the latter period of his illness. The great benefit which the Duke derived from the medicines prescribed by Sir Astley, strengthened the confidence of the King in the profound medical knowledge of his serjeant-surgeon, to whom, therefore, he unhesitatingly stated his apprehensions. The worthy Baronet instituted, as may well be supposed, a very careful examination, which however was so protracted and severe, that the King at last exhibited tokens of impatience, and said, "Well, Sir Astley, I hope you are satisfied." "Quite satisfied," replied the Baronet, "that your Majesty is free from any dropsical affection." The opinion thus confidently, and, we may say, truly given, did not entirely dissipate his Majesty's fears, and the King often referred to the subject in his conversations with the favoured persons by whom he was usually surrounded. It is probable, however, that the dread of a revulsion of the gout from the extremities to the heart, was still stronger than that arising from the apprehension of dropsy; and his Majesty does not seem to have been aware that a gouty inflammation within the chest, could be the immediate cause of the other dreaded calamity, namely, the dropsical effusion. In this respect, his Majesty's knowledge of pathology does not appear to have exceeded, although we believe it fully equalled, that of the invisible medical junto, including, of course, the signers of the "treacherous" bulletins,—the physician who *did* see, and the physician who *did not* see the royal patient. Whatever may have been the extent of the King's alarm, it is quite certain that it operated very little upon his mode of living. He partook of the luxuries of the table as heartily and as cheerfully as ever; and if his Majesty were really conscious of danger, he bore up against it with a truly heroic spirit. Now the royal medical junto, the magician, the intriguing magician, and his band, allege as their excuse for not having made the public and the King himself acquainted with the nature of his Majesty's disease, probably the "injurious effect which the disclosure might have had upon the disease itself." Thus GEORGE the Fourth, who was proverbial for his courage, for his unbending, inflexible, firmness, was expected to expire if the word *danger* were whispered in his ear. This is the insult now offered to his memory by those who had the sagacity to discover, that "considerable" portions of the lungs, which were "*unaltered* in structure," had "become *consolidated!*" The King, however,—and this shows the disgraceful character of the subterfuge of the "invisibles,"—had long been of opinion that he was labouring under an affection of the heart, indicated, as he himself believed, by his intermittent pulse; but the value of the excuse will be better appreciated, when it is known that Mr. WARDROP was consulted in March last, and called upon by the King for his "honest and candid opinion," at once,—and in justice to his manly integrity and depth of his skill be it spoken,—intimated to his royal master the affection of the heart, the malady from which he was suffering. Away, then, with the flimsy, the hypocritical excuse, of the royal medical junto! The two or three facts which we have here stated, are sufficient to overwhelm the whole band with everlasting disgrace. King GEORGE the Fourth is dead, but with him happily expired the reign of the "invisibles." The magician is dismissed, and it were well for WILLIAM the Fourth, if the imps and other agents of the entire junto were all driven from the Court, and made to accompany their benighted master to his shady "seat."

Public Health.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

City and Port of Liverpool.—Dr. E. W. Hope, in his annual report for 1907, states that the year was characterised by having the lowest death-rate ever recorded in Liverpool. Liverpool has, and will no doubt continue to have, a great number of deaths debited to it of persons who are strangers to the city who have been brought into it by ships, or who have come from a distance to seek relief in nursing homes and other places for the treatment of the sick. The recorded death-rates therefore include some deaths of persons who do not belong to the district. It is particularly gratifying to notice the diminution in infant mortality in the city as a whole. It is in the zymotic death-rate that the decline is most marked, notably in zymotic diarrhœa, a circumstance partly owing to the coolness of the summer and the rainfall. Measles and whooping-cough continue to claim a large number of victims. Each of these diseases destroys more lives than those forms of sickness which are included under the term "dangerous infectious disease," such as scarlet fever, typhoid fever, typhus fever, and diphtheria, a circumstance which shows the necessity for a closer application of preventive measures in these forms of sickness. The benefits of the general sanitary measures adopted in the city are nowhere more conspicuously shown than in the case of tuberculosis, the decline in this form of disease being one of the most encouraging features of urban sanitary administration. The voluntary notification of pulmonary tuberculosis and the distribution of cards of instruction for consumptive people and those who live with them have been attended with marked benefit, and the results of the use of one of the wards at the Fazakerley hospital for cases of the disease are most encouraging. The abuse of alcohol in certain districts of the city is a

melancholy feature and is the subject of comment in an extended paragraph. A very large amount of routine administrative work is recorded in Part II. of the report, which deals not only with ordinary district inspection but with the interchange of references from various corporate departments, the supervision of lodging houses, canal boats, suppression of smoke, proceedings under the Factory and Workshop Act, Midwives Act, the hygiene of schools, the removal of patients to hospital, the work of the milk depôts, the supervision of the food-supplies, and the work of bacterial and chemical examination authorised by the Acts of Parliament. Considerable progress has been made not only with regard to the demolition of insanitary property but in the reconstruction of house property in certain directions, which has rendered such property fit for habitation. Important additions have been made to the number of corporation dwellings which are reserved for tenants who have been dispossessed and whose general behaviour is such as to justify their acceptance as tenants. In the corporation hospitals steps have been taken by the health committee to render the training of probationer nurses more efficient. Probationers are received at some, but not all, of the city hospitals, and under the arrangements now arrived at the system, which will include lectures as well as practical and clinical instruction, will render the course of training a very full and complete one. At the present time the number of beds available in the six infectious hospitals is 1074, apportioned as follows but subject to modification as circumstances necessitate: small-pox, 160 beds; typhus fever, 20 beds; typhoid fever, 100 beds; scarlet fever, 554 beds; diphtheria, 80 beds; measles, 60 beds; besides 100 beds for isolation purposes. The value of these hospitals and the immense amount of useful work performed are shown by the fact that no less than 4578 patients were treated within their walls in 1907, the great majority being cases of scarlet fever. The average duration of stay in hospital of patients whose treatment was completed during the year 1907 was as follows: scarlet fever patients from eight to nine weeks, typhoid fever patients from six to seven weeks, typhus fever patients from four to five weeks, and diphtheria patients from five to six weeks. Arrangements have been made to deal with any case of cholera, yellow fever, or plague which may arise in any of the neighbouring urban or rural districts. A suitable charge is made in each case.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8694 births and 3554 deaths were registered during the week ending July 11th. The annual rate of mortality in these towns, which had been equal to 11·8 per 1000 in each of the two preceding weeks, declined to 11·4 in the week under notice, a lower rate than had prevailed in any previous week of this year. During the 13 weeks of the past quarter the annual death-rate in these towns averaged only 13·8 per 1000, and in London did not exceed 13·3. The lowest annual death-rates in the 76 towns during the week under notice were recorded in the metropolitan suburban districts of Willesden, Hornsey, and Leyton; the rates in the other towns ranged upwards, however, to 17·2 in Rotherham, 17·6 in Oldham, 18·6 in Middlesbrough, and 24·1 in Warrington. The death-rate in London during the week did not exceed 10·8. The 3554 deaths in the 76 towns during the week showed a further decline of 111 from the low numbers returned in recent weeks, but included 332 which were referred to the principal epidemic diseases, against 296 and 299 in the two preceding weeks; of these 332 deaths, 113 resulted from diarrhœa, 75 from whooping-cough, 62 from measles, 37 from diphtheria, 28 from scarlet fever, and 17 from "fever" (principally enteric), but not one from small-pox. The deaths from these epidemic diseases last week were equal to a mean annual rate of 1·1 per 1000, against 1·0, the rate from the same diseases in each of the four preceding weeks; the rate from these diseases in London was again so low as 0·8. No death from any of these epidemic diseases was registered last week in Willesden, Brighton, Tottenham, Wolverhampton, Northampton, Huddersfield, or in eight other smaller towns; the annual death-rate from these diseases ranged upwards, however, to 2·9 in Burton-on-Trent and in Warrington, 3·1 in Salford, 3·4 in Merthyr Tydfil, and 4·1 in Rotherham. The deaths attributed to diarrhœa in the 76 towns, which had steadily increased in the four preceding weeks from 63 to 92, further rose to 113 in the week under notice, and caused annual death-rates equal to 1·7 in Plymouth and in Birkenhead, 2·0 in Stockton-on-Tees, and 2·5 in Rotherham. The 75 fatal cases of whooping-cough also showed an increase upon the numbers in recent weeks, causing the highest death-rates, 1·0 in Bristol, 1·1 in Salford, and 1·2 in Portsmouth. The 62 deaths from measles, however, showed a further decline from recent weekly numbers, the highest rates from this disease being 1·1 in Salford and in Swansea. The fatal cases of diphtheria, which had been 35 and 40 in the two previous weeks, declined again to 37 last week, which included 10 in London and its suburban districts, and three each in Liverpool, Salford, and Warrington. The 28 fatal cases of scarlet fever, and the 17 deaths referred to "fever," both showed some increase upon the numbers in recent weeks, but caused no exceptional mortality in any of the 76 towns. The number of scarlet fever patients under treatment in the Metropolitan Asylums and London Fever Hospitals, which had declined in the ten preceding weeks from 2938 to 2529, increased again to 2597 during the week ending July 11th; the number of new cases of this disease admitted to these hospitals during the week under notice rose to 437, from 310, 365, and 322 in the three preceding weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 107 and 120 in the two previous weeks, declined to 106 in the week under notice, and were 23 below the corrected average number in the corresponding week of the five years 1903-07. Six deaths in London were again directly referred to influenza during the week. The causes of 28, or 0·8 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were again duly certified in London, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Hull, and in 52 other smaller towns; six uncertified causes of death were, however, registered during the week in Birmingham, three in Sheffield and in Preston, and two in Burnley and in Halifax.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 14·7, 14·5, and 12·5 per 1000 in the three preceding weeks, rose again to 13·2 in the week ending July 11th. During the 13 weeks of the past quarter the annual death-rate in these eight towns averaged 16·4 per 1000, and exceeded by no less than 2·6 the mean rate during the same period in the 76 English towns. Among the eight Scotch towns the death-rates during the week under notice ranged from 8·5 and 10·4 in Aberdeen and Paisley to 13·8 in Glasgow and in Greenock, and 17·6 in Dundee. The 465 deaths in the eight towns showed an increase of 25 upon the low number in the previous week, and included 59 which were referred to the principal epidemic diseases, against 40 and 41 in the two preceding weeks; of these 59 deaths, 29 resulted from diarrhœa, 17 from whooping-cough, six from "fever," three from measles, and two each from scarlet fever and diphtheria, but not one from small-pox. These 59 deaths were equal to an annual rate of 1·7 per 1000, the mean rate from the same diseases in the 76 English towns during the same week being 1·1. The deaths attributed to diarrhœa in the eight towns, which had been 10, 16, and 11 in the three preceding weeks, rose to 29 in the week under notice, and included 18 in Glasgow, four in Dundee, and two both in Leith and Greenock. The 17 fatal cases of whooping-cough exceeded the numbers in either of the two previous weeks; ten occurred in Glasgow and five in Edinburgh. Of the six deaths referred to "fever" five were certified as cerebro-spinal meningitis and one (in Dundee) as typhus; four of the deaths from cerebro-spinal meningitis occurred in Glasgow and one in Leith. The three fatal cases of measles corresponded with the number in the previous week and both the deaths referred to diphtheria were returned in Glasgow. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 67 and 68 in the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JUNE, 1908.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1908.	NOTIFIED CASES OF INFECTIOUS DISEASE.										DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Total.	Annual rate per 1000 persons living.	Diarrhœa.		
LONDON	4,795,737	—	1280	440	1	67	1	19	260	6	2054	5·6	—	109	34	30	73	—	6	—	327	0·9	75	3645	10·4	78
West Districts.																										
Paddington	150,923	—	62	8	—	1	1	—	8	—	80	6·9	—	3	—	—	—	—	—	—	4	0·3	1	109	9·4	46
Kensington	182,752	—	14	19	—	2	—	1	8	—	44	3·1	—	1	—	4	1	—	—	—	9	0·6	3	144	10·3	62
Hammersmith	124,012	—	20	11	—	4	—	—	5	—	40	4·2	—	1	—	—	4	—	—	—	13	1·4	8	113	11·9	105
Fulham	171,562	—	23	21	—	4	—	1	13	—	62	4·7	—	9	1	1	6	—	1	—	21	1·6	3	130	9·9	65
Chelsea	76,049	—	12	7	—	1	—	—	5	—	25	4·3	—	1	1	—	—	—	—	—	3	0·5	1	60	10·4	60
City of Westminster	170,545	—	36	12	—	3	—	2	6	—	59	4·5	—	1	—	1	—	—	—	—	3	0·2	1	123	9·4	64
North Districts.																										
St. Marylebone	126,867	—	21	6	—	4	—	—	6	—	37	3·8	—	—	4	1	2	—	—	—	9	0·9	2	105	10·8	60
Hampstead	92,654	—	19	3	—	4	—	—	4	—	30	4·2	—	1	—	—	1	—	1	—	3	0·4	—	41	5·8	70
St. Pancras	237,075	—	64	12	—	2	—	—	15	—	93	5·1	—	—	6	2	7	—	—	—	16	0·9	1	198	10·9	79
Islington	349,091	—	64	22	—	6	—	2	20	—	114	4·3	—	3	—	4	5	—	2	—	16	0·6	2	251	9·4	71
Stoke Newington	54,015	—	15	4	—	—	—	—	—	—	19	4·6	—	—	—	—	1	—	—	—	1	0·2	—	39	9·4	67
Hackney	235,253	—	68	18	—	3	—	1	10	2	102	5·7	—	4	1	1	4	—	1	—	16	0·9	5	168	9·3	73
Central Districts.																										
Holborn	54,466	—	12	2	—	—	—	—	3	—	17	4·1	—	—	1	—	—	—	—	—	1	0·2	—	47	11·2	61
Finsbury	96,067	—	31	17	—	2	—	—	9	1	59	8·0	—	3	—	—	1	—	—	—	7	1·5	—	86	11·7	79
City of London	19,252	—	1	1	—	—	—	—	—	—	2	1·4	—	1	—	—	—	—	—	—	1	0·7	—	22	14·9	91
East Districts.																										
Shoreditch	115,227	—	26	8	—	5	—	2	10	1	52	5·9	—	5	2	—	1	—	—	—	9	1·0	1	115	13·0	103
Bethnal Green	131,066	—	69	17	—	—	—	—	7	—	93	9·3	—	7	2	1	5	—	1	—	19	1·9	4	130	12·9	145
Stepney	310,706	—	155	45	1	4	—	1	15	—	221	9·3	—	14	3	3	7	—	1	—	26	1·5	8	278	11·7	82
Poplar	171,516	—	62	28	—	—	—	1	8	—	99	7·5	—	7	2	4	3	—	—	—	23	1·7	7	160	12·2	72
South Districts.																										
Southwark	210,442	—	58	10	—	1	—	1	22	1	93	5·8	—	10	1	—	7	—	—	—	21	1·3	3	202	12·5	94
Bermondsey	127,910	—	39	23	—	2	—	—	10	1	75	7·6	—	11	1	2	—	—	—	—	16	1·6	2	170	17·3	140
Lambeth	321,344	—	60	26	—	1	—	1	13	1	132	5·4	—	12	4	3	3	—	—	—	25	1·0	3	275	11·2	76
Battersea	183,873	—	71	11	—	3	—	3	9	—	97	6·9	—	3	2	—	1	—	—	—	9	0·6	3	131	9·3	86
Wandsworth	289,506	—	58	28	—	4	—	—	17	—	105	4·7	—	1	1	1	3	—	—	—	11	0·5	5	200	9·0	75
Camberwell	280,022	—	47	16	—	—	—	—	16	—	79	3·7	—	3	1	1	5	—	—	—	12	0·6	2	195	9·1	61
Deptford	117,539	—	42	7	—	2	—	3	8	—	62	6·9	—	3	—	—	1	—	—	—	5	0·6	1	87	9·6	39
Greenwich	109,110	—	21	10	—	3	—	—	4	—	38	4·5	—	2	—	—	1	—	—	—	3	0·4	—	73	8·7	56
Lewisham	158,627	—	21	26	—	3	—	—	4	—	54	4·6	—	1	1	1	2	—	—	—	5	0·4	—	106	8·8	76
Woolwich	131,346	—	29	23	—	1	—	—	5	—	68	6·7	—	2	—	—	2	—	—	—	6	0·6	2	87	8·6	71
Port of London	—	—	—	1	—	2	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

two preceding weeks, declined to 51 in the week under notice, and were fewer by 31 than the number returned in these towns in the corresponding week of last year. The causes of 18, or 3·9 per cent., of the deaths registered in the eight towns during the week were not stated or not certified; in the 76 English towns during the same week the proportion of uncertified causes of death did not exceed 0·8 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 16·0 and 17·7 per 1000 in the two preceding weeks, further rose to 20·0 in the week ending July 11th. During the 13 weeks of the past quarter the death-rate in Dublin averaged 20·4 per 1000; the mean rate during the same period did not exceed 13·8 in London and 15·5 in Edinburgh. The 151 deaths of Dublin residents registered during the week under notice showed a further increase of 17 upon the numbers returned in the two preceding weeks, and included 12 which were referred to the principal epidemic diseases, against 11 in each of the two previous weeks. These 12 deaths were equal to an annual rate of 1·6 per 1000, the rate during the week from the same diseases being only 0·8 in London and 0·9 in Edinburgh. Of the 12 deaths from these epidemic diseases in Dublin, three resulted from measles, three from whooping-cough, three from diarrhœa, two from "fever," and one from diphtheria, but not one either from scarlet fever or small-pox. The fatal cases of measles showed a decline, while those of whooping-cough and diarrhœa were more numerous. The 151 deaths from all causes in the city during the week included 36 of infants under one year of age and 37 of persons aged upwards of 60 years; the deaths of infants showed a marked increase upon recent weekly numbers, while those of elderly persons had declined. Three inquest cases and two deaths from violence were registered, and 59, or 39·1 per cent., of the deaths during the week occurred in public institutions. The causes of five, or 3·3 per cent., of the deaths registered during the week were uncertified; the causes of all the 989 deaths registered in London last week were duly certified; while in Edinburgh the proportion of uncertified causes was equal to 5·9 per cent.

VITAL STATISTICS OF LONDON DURING JUNE, 1908.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 5·6 per 1000 of the population, estimated at 4,795,757 persons in the middle of the year; in the three preceding months the rates were 6·8, 6·1, and 6·2 per 1000 respectively. The lowest rates last month were recorded in Kensington, St. Marylebone, Holborn, the City of London, and Camberwell; and the highest rates in Finsbury, Bethnal Green, Stepney, Poplar, and Bermondsey. There was a considerable diminution in the prevalence of scarlet fever during June as compared with that in the preceding month; among the various metropolitan boroughs this disease was proportionally most prevalent in Paddington, Bethnal Green, Stepney, Poplar, Battersea, and Deptford. The Metropolitan Asylums Hospitals contained 2514 scarlet fever patients at the end of last month, against 3150, 2868, and 2707 at the end of the three preceding months; the weekly admissions averaged 307, against 336, 319, and 342 in the three preceding months. Diphtheria was again less prevalent than it had been in other recent months; the greatest proportional prevalence of this disease last month was recorded in Finsbury, Bethnal Green, Stepney, Poplar, Bermondsey, Lewisham, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1081, 872, and 804 at the end of the three preceding months, had further fallen to 768 at the end of June; the weekly admissions averaged 95, against 131, 107, and 105 in the three preceding months. There was a marked rise in the prevalence of enteric fever last month; among the several metropolitan boroughs this disease was proportionately most prevalent in Hammersmith, Fulham, St. Marylebone, Hampstead, Shoreditch, and Greenwich. The Metropolitan Asylums Hospitals contained 48 patients at the end of last month, against 45 at the end of each of the two preceding months; the weekly admissions averaged eight, against seven in each of the two preceding months. Erysipelas was proportionally most prevalent in Fulham, Finsbury, Shoreditch, Southwark, and Bermondsey. The 19 cases of puerperal fever notified during the month included three in Battersea, three in Deptford, and two each in the City of Westminster, in Stoke Newington, and in Shoreditch. Of the six cases notified as cerebro-spinal meningitis two belonged to Hackney and one each to Shoreditch, Southwark, Bermondsey, and Lambeth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending June 27th the deaths of 3845 persons belonging to London were registered, equal to an annual rate of 10·4 per 1000; in the three preceding months the rates were 16·1, 14·9, and 12·2 per 1000. The death-rates last month in the several boroughs ranged from 5·8 in Hampstead, 8·6 in Woolwich, 8·7 in Greenwich, 8·8 in Lewisham, 9·0 in Wandsworth, and 9·1 in Camberwell, to 11·9 in Hammersmith, 12·2 in Poplar, 12·5 in Southwark, 12·9 in Bethnal Green, 13·0 in Shoreditch, and 17·3 in Bermondsey. The 3845 deaths from all causes included 327 which were referred to the principal infectious diseases; of these, 109 resulted from measles, 34 from scarlet fever, 30 from diphtheria, 73 from whooping cough, six from enteric fever, and 75 from diarrhœa, but not any from small-pox, from typhus fever, or from ill-defined pyrexia. The lowest death-rates last month from these diseases in the aggregate were recorded in Paddington, the City of Westminster, Hampstead, Stoke Newington, Holborn, Greenwich, and Lewisham; and the highest rates in Fulham, Finsbury, Bethnal Green, Stepney, Poplar, and Bermondsey. The 109 deaths from measles were 97 below the corrected average number in the corresponding period of the five preceding years; this disease was proportionately most fatal last month in Fulham, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Bermondsey. The 34 fatal cases of scarlet fever were equal to the corrected average number; the greatest proportional mortality from this disease was recorded in St. Marylebone, St. Pancras, Shoreditch, Bethnal Green, and Lambeth. The 30 deaths from diphtheria were 11 fewer than the corrected average for the corresponding period of the five preceding years; the highest death-rates last month from this disease were recorded in Kensington, Islington, Stepney, Poplar, Bermondsey, and Lambeth. The 73 fatal cases of whooping-cough were 47 below the corrected average; this disease was proportionately most fatal in Hammersmith, Fulham, St. Pancras, Bethnal Green, and Southwark. The six deaths referred to enteric fever were less than half the corrected average number; of these six deaths two belonged to Islington and one each to Fulham, Hampstead, Hackney, and Stepney. The 75 fatal cases of diarrhœa were slightly below the corrected average number; the greatest proportional mortality from this disease was recorded in Hammersmith, Hackney, Finsbury, Bethnal Green, Stepney, and Poplar. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was 35·5 per cent. below the average.

Infant mortality, measured by the proportion of deaths among children under one year of age to registered births, was equal to 78 per 1000. The lowest rates of infant mortality were recorded in Paddington, Chelsea, St. Marylebone, Holborn, Camberwell, Deptford, and Greenwich; and the highest rates in the City of London, Shoreditch, Bethnal Green, Southwark, and Bermondsey.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

In accordance with the provisions of Her late Majesty's Order in Council of April 1st, 1881, Fleet-Surgeon Robert Hardie has been placed on the retired list at his own request (dated July 10th, 1908).

ROYAL ARMY MEDICAL CORPS.

Captain Thomas Biggam, from temporary half-pay, to be

* Including membranous croup.

Captain, with precedence next below T. E. Fielding (dated June 26th, 1908).

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant Frederick E. Bissell to be Surgeon-Captain (dated June 30th, 1908).

VOLUNTEER CORPS.

Rifle: 2nd Volunteer Battalion, The Hampshire Regiment: Surgeon-Lieutenant-Colonel Arthur B. Wade is granted the honorary rank of Surgeon-Colonel (dated March 30th, 1908). Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Arthur B. Wade resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated March 31st, 1908). Surgeon-Lieutenant Herbert G. Harris resigns his commission (dated March 31st, 1908).

ROYAL ARMY MEDICAL CORPS BUILDINGS AT WOOLWICH.

We understand that it is proposed to erect buildings for the Royal Army Medical Corps on the north side of Shooter's Hill-road, Woolwich, opposite to the hospital buildings.

THE GOVERNMENT AND THE MEDICAL DEPARTMENT OF THE ROYAL NAVY.

In the House of Commons on July 13th, on the vote of £258,700 for medical establishments and services, Mr. McKenna, in reply to Mr. Claud Hay, said that the Admiralty was always endeavouring to improve the medical and hospital service. No special work had been done during the past year, except perhaps in respect of Malta fever. Efforts were being made to eliminate this fever in Malta. Mr. Hay asked whether there had been any increase in the medical staff of the navy during the last twelve months. Had there been any increase in the number of nurses? Had there been any increase in the number of comforts for sailors suffering from diseases in these naval hospitals? Had anything at all been done this year?

TRAINING OF THE ROYAL ARMY MEDICAL CORPS (TERRITORIAL FORCE).

In a memorandum which was issued in 1907 to the members of the medical profession the general principles of the methods of training for the Royal Army Medical Corps (Territorial Force) were enunciated. A memorandum has now been issued by the War Office indicating in detail the method by which these principles are to be applied.

THE NAVAL MEDICAL SUPPLEMENTAL FUND.

At the quarterly meeting of the directors of the Naval Medical Supplemental Fund, held on July 14th, Sir C. Inigo Thomas, K.C.B., in the chair, the sum of £55 was distributed among the several applicants.

Major F. Kiddle, R.A.M.C., has been instructed to visit the stations of Secunderabad, Bangalore, and Wellington and to examine the eyesight of the children of British soldiers at these places.

Lieutenant-Colonel W. M. James, A.M.S. (retired), has been noted for appointment at Guildford as medical officer in charge of troops.

Correspondence.

"Audi alteram partem."

REMOVAL OF APPENDIX AFTER PERITYPHLITIC ABSCESS.

To the Editor of THE LANCET.

SIR,—I was pleased to see Mr. W. H. Battle's paper in THE LANCET of July 11th drawing attention to the importance of this matter. I have for several years past made it a routine procedure, having been gradually compelled to advise it owing to my experience of trouble after such abscesses had healed.

I agree thoroughly with Mr. Battle that the appendix is more likely to give trouble after abscess formation. I do not agree, however, with his statement that "it is never obliterated." I should place the proportion in which it is destroyed at about 2 per cent. in my series of cases. One cannot apparently decide from the character of the abscess whether such obliteration has occurred. I have repeatedly seen the appendix intact in its whole length after very acute abscesses, while in one case of complete obliteration, and in another case where only three-quarters of an inch of a stump was left, the abscesses had been comparatively mild. The proportion of cases of obliteration is so small that it may be neglected.

Mr. Battle gives no hint as to when he thinks the second operation should be carried out than merely the remark, "Operation at an early date after closure of the abscess." Personally I recommend the second operation and carry it out when possible immediately the abscess has healed. This I do for several reasons. 1. The patient's resistance to the organisms causing the inflammation is at a high level, as is shown by the healing of the abscess, indicating victory over such organisms. 2. Adhesions are less difficult to deal with at this period than at a later date. 3. Much time is saved to the patient who otherwise must usually undergo a somewhat prolonged convalescence. The average time taken for complete healing of such abscesses, if properly treated, is slightly over three weeks. The second operation, carried out in the majority of cases almost identically as Mr. Battle describes, does not detain the patient longer than another 14 days. The procedure is justified by the results—no deaths in 45 cases.

In dealing with the primary abscess it is best to make an opening large enough only to admit careful examination of the interior of the abscess by the finger for diverticula, concretions, &c. Prolonged or rough manipulations at this stage simply delay healing and are liable to cause fæcal fistula. Diverticula should be drained, concretions removed. Healing is stimulated by the use of Klapp's suction, even before the removal of drainage-tubes, and by the injection of suitable vaccines—staphylococcus, streptococcus, or bacillus coli, one or all. If oozing of blood or other reason during the second operation seems to indicate drainage, this may be carried out by a "cigarette" drain pulled through a puncture corresponding to the recently healed sinus.

So resistant may the appendix be to the destructive power of such abscesses that I have seen in one case three abscesses, and in several cases two abscesses, fail to destroy the appendix. In the first case the intervals between the abscess formation were two years and six weeks. The first abscess was incised and drained, the second burst into the bowel, and the third was opened by me and the intact appendix removed when this had healed. In another case a large abscess was opened surgically and 14 years after a second large abscess was drained by me and thereafter the appendix, perforated at its tip but otherwise quite intact, was removed.

With regard to the time of operation after acute attacks without abscess formation, for the reasons given above I consider that the best time for operation is towards the end of the first week after subsidence of the acute symptoms.

I am, Sir, yours faithfully,

Aberdeen, July 13th, 1908. H. M. W. GRAY.

THE LAVATORY AND SEATING ACCOMMODATION AT THE FRANCO-BRITISH EXHIBITION.

To the Editor of THE LANCET.

SIR,—I was very pleased to see an article in THE LANCET of July 4th calling attention to the lavatory accommodation at the Franco-British Exhibition. Last week I was there with my wife and a friend, but during most of the time my wife had a very severe headache, so much so that she was obliged to lie down most of the time, and I would like to bring to your notice the fact that she had to lie down on a form in the grounds and afterwards in an unfinished shed. As far as I could ascertain there is no accommodation for people who are taken ill, where they can lie down or get some water; there is an ambulance there but no nurses until about 6 o'clock.

Another thing I noticed there was the absence of free seating accommodation, and I consider this unreasonable, as it prohibits school parties and working people with their children from resting. Very few of the uniformed men in the ground know anything about the place and could not direct me to any chemist. If you think these matters worth investigating and could bring them to the notice of the

public health authorities through the columns of your journal, I am sure visitors would be benefited.

I am, Sir, yours faithfully,

H. S. BURNELL-JONES.

Tower Gardens-road, Tottenham, N., July 7th, 1908.

THE TECHNIQUE OF OPSONIC ESTIMATION.

To the Editor of THE LANCET.

SIR,—The method of estimating the resistance of a patient's blood to infection in use in this laboratory presents certain advantages over the ordinary procedure and hence we beg to submit it to your readers. (1) A truer estimate of the antibacterial powers of the blood is obtained as the individual's serum and leucocytes are both examined; (2) the procedure is more simple and rapid, as the patient's leucocytes, which are freely obtained in the preparation, are used; the tedious collection of washed leucocytes is saved; (3) by varying the dilution of the serum and by use of a thick emulsion of bacteria a truer estimate of the quantity of opsonin is obtained (W. E. Marshall); and (4) the staining qualities of the preparation are excellent and the addition of sodium citrate solution does not practically affect the results, as shown also by Dr. R. M'L. Veitch.

Method.—One large volume of the patient's blood is taken up into the capillary pipette, then five equal volumes of citrated salt solution (sod. cit. 1·5 per cent., sod. chlor. 0·75 per cent.) and one equal volume of thick bacterial emulsion in salt solution (0·75 per cent.). This is well mixed and sealed and a similar preparation of a "normal" blood is made and both incubated in the horizontal position in the incubator at 37° C. for 20 minutes.

Three slides of each are prepared and stained and 50 leucocytes counted in the usual way, the bacteria per leucocyte of the control slide is taken as unity; the methods in use in estimating resistance to infection are: (1) the well-known one of Sir A. E. Wright, Professor W. B. Leishman, and Captain Douglas in which the phagocytes are regarded as indifferent factors. (2) The procedure of dilution (Simon, Klien, &c.) based upon numbers of leucocytes capable of phagocytosis ("phagocyting leucocytes") in varying dilutions of the serum. Dr. C. E. Simon states that the phagocytic power generally diminishes with the dilution, but it may be rapidly exhausted. In the latter case Simon assumes that the amount of opsonin is materially less, the use of a concentrated serum might show an apparently normal opsonic serum content for a given number of organisms which would be inadequate for a larger number. Such inadequacy becomes manifest when the serum is diluted, a rapid exhaustion of phagocytic power occurring. Dr. G. Dean regards this method as affording some check upon the opsonic index as obtained by Wright's technique. The leucocytes are regarded, again, as indifferent. For some years workers in Brighton saw that the index of a patient's resistance would be bound to be more representative if his or her leucocytes were used. It was simple to prove that eosinophiles and myelocytes have less powers of phagocytosis than polymorphonuclears, and that the polynuclear leucocytes of workers in this laboratory were possessed of a threefold phagocytic power to those of a myelocythæmic patient. Dr. J. C. G. Ledingham showed this independently and that the opposite condition held in the polynuclears of a patient with chronic lymphatic leukæmia.

Rosenow showed that pneumonic leucocytes are more active *per se* than normal ones. Opie emphasises the necessity of leucocytic digestion as compared with mere ingestion of bacteria and demonstrated the powers of digestion on gelatin of leucocytes removed from serum. Glynn confirms the variation in the functional activity of leucocytes and Shattock and Dudgeon in a recent valuable paper clearly show the importance of estimating the "hæmophagocytic" powers, including both leucocytes and serum. In our experience the functional activity may be diminished or increased in immunes, and as we believe that it comes within the unavoidable margin of error of the present technique we have not so far been able to detect the factors that guide it. This we hope to do.

We are, Sir, yours faithfully,

F. G. BUSHNELL.
A. G. TROUP.

Sussex County Hospital, July 10th, 1908.

A LURID STORY.

To the Editor of THE LANCET.

SIR,—The following story has several morals, the most obvious perhaps being the need for a proper system of nurses' registration and for the inspection of nursing homes and institutions.

Early this year a lady applied for admission as a nurse at a general hospital but as she was 34 years of age she was considered too old to be engaged for the full period of four years' training. As in all other respects she seemed very suitable the matron consented to take her on trial for three months as a paying probationer. She obtained a medical certificate stating that she was in good health and gave two references, one from a lady who said she had known her for about 12 years and in whose family she had at different times done some nursing; the other from the superintendent of a suburban nursing home, under whom she had worked for the previous three months. Both ladies spoke very highly of her. Both the applicant and her referees had to answer printed inquiries about her previous health and the diseases from which she had suffered and said nothing whatever about any mental disorder. For about two months she did her work quite satisfactorily as a junior probationer in the hospital, when suddenly she developed symptoms of acute mania, addressed a postcard to the King, became incoherent, and had all kinds of delusions, religious, sexual, &c. Her nearest relation, a married sister living many miles away, was at once informed of the circumstances. She evidently telegraphed to a private asylum, from which a nurse was promptly sent, provided with an Urgency Order under the Lunacy Act, and as soon as this had been filled up at the hospital the patient was removed to the asylum. From this nurse it was ascertained that the patient had been under treatment in the same asylum on either four or five previous occasions and that the last attack had been a very severe one, so that she had been detained about 12 months, and had only been discharged about a year ago.

Inquiries were now made from the matron of the nursing home who had been one of the patient's referees. She acknowledged that when she engaged her, being rather pressed at the time for nurses and satisfied with the applicant's appearance and address, she had accepted her without any references whatever, that she had nursed some patients in the institution and others in their own homes, and had given complete satisfaction. Thus we have an instance of a woman being taken on to the staff of a nursing home without having had any hospital training whatsoever and without any inquiries being made. She is then placed in charge of patients, sometimes at their own homes, presumably as a fully trained nurse, yet she had not long been discharged for the fourth or fifth time from an asylum and was liable at any moment to a fresh attack of acute mania.

As it happened, when the recurrence did occur no particular harm was caused, but had the nurse been in a private house in sole charge of a patient seriously ill instead of being merely a junior probationer in a hospital the consequences might have been very different.

I am, Sir, yours faithfully,

July 13th, 1908. F.R.C.P.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The following prizes were awarded for the summer session:—Barker anatomical prize (£31 10*s.*): G. C. Sneyd; special prize £26 5*s.*, Miss I. M. Clarke. Carmichael scholarship (£15): J. S. Pegum. Mayne Scholarship (£8): T. C. Boyd. Gold medal in operative surgery: R. Adams; silver medals, C. Greer and G. C. Sneyd. Stoney memorial gold medal in anatomy: H. G. P. Armitage. Practical histology: J. T. Duncan, first prize (£2) and medal; and L. W. Roberts, second prize (£1) and certificate. Practical chemistry: B. Kelly, first prize (£2) and medal; and W. N. Harrison, second price (£1) and certificate. Public health and forensic medicine: F. W. Warren, first prize (£2) and medal; and H. R. Tighe, second prize (£1) and certificate. Materia medica: J. S. Pegum, first prize (£2) and medal; and Miss N. Williams, second prize (£1) and certificate. Biology: M. J. Hillery, first prize (£2) and medal; and G. E. Pepper, second prize (£1) and certificate. The winter session will commence on Thursday, Oct. 15th.

NOTES UPON HEALTH RESORTS.

SCANDINAVIAN WINTER HEALTH STATIONS.

(BY A SPECIAL COMMISSIONER.)

VIII.[1]

THE ANTI-TUBERCULOSIS MOVEMENT IN SWEDEN.

SWEDEN occupies a foremost place among those progressive nations which are seriously and scientifically organising and conducting a successful combat with that most disastrous of maladies, tuberculosis. Much thought, time, and money are being wisely devoted to measures seeking to secure the prevention and arrest of this scourge of humanity. No student of the medico-sociological features of the tuberculosis problem can afford to be ignorant of the methods and means which Sweden is employing to compass the elimination of tuberculosis from its people. Judged from the standpoint of size of population there is probably no other European nation which is accomplishing more. Certainly everyone engaged in the practical service of conducting anti-tuberculosis work in this land or among other civilised races should take the earliest opportunity of studying Swedish procedures and provisions. They are in all cases highly suggestive and in many instances may be adopted as trustworthy models and safely imitated.

Sweden, like other northern nations, has suffered incalculable loss from the ravages of tuberculosis. Lack of proper sanitary knowledge and supervision, unhygienic customs and habits of life, imperfect housing, scanty dietary, and other economic and social factors have in the past done much to prepare a soil suited for the tuberculous seed and have perpetuated and multiplied what must be viewed as in great measure a preventable ill.

Even still prejudices and practices prevent progress. The climatic conditions prevailing during a considerable portion of the year are often made an excuse for the exclusion of fresh air from both public and private establishments and the excessive heating of dwellings. Public buildings, private houses, and railway carriages all appeared to me to be almost invariably overheated and oppressive. Most of the hotels and better homes are furnished with double windows. Stoves exist in almost every apartment. In many instances they are elaborate artistic productions. The newer establishments are now generally heated by radiators. In discussing this matter relative to overheating and lack of ventilation I was invariably met with a laughing reference to the shivering comforts afforded by an English open fire-grate and a humorous query as to our reasons for adopting a form of heating which necessitates a toasting of one side of the body and a more or less freezing of the other. This overheating of private dwellings and public buildings, combined with excesses in smoking, chewing, and in not a few cases drinking, seems to lead to the production of a catarrhal condition of the throat and respiratory passages, accompanied by plentiful secretion. Hence expectoration prevails as a deeply rooted and apparently almost general habit. As evidence of the truth of this it is only necessary to point to the spittoons which in railway carriages and public places are rarely conspicuous by their absence. The dark, dusty, and in other ways non-hygienic conditions of many of the wooden houses of the peasants are also important aids in the development and perpetuation of tuberculosis.

Faced with long-standing and seemingly almost insuperable difficulties, it is remarkable what progress Sweden has made in a comparatively brief period in organising and energising practical measures to oppose the "Captain of the Men of Death." Many influences and forces have happily combined in the establishment and maintenance of an efficient and effective anti-tuberculosis campaign. Brief reference should at least be made to the more important of these educational and administrative forces.

[1] Nos. I., II., III., IV., V., VI., and VII. were published in THE LANCET of April 25th (p. 1238), May 2nd (p. 1306), 16th (p. 1435), and 30th (p. 1578), June 13th (p. 1717) and 27th (p. 1875), and July 4th (p. 51), 1908, respectively.

THE EVOLUTION OF THE ANTI-TUBERCULOSIS MOVEMENT IN SWEDEN.

In 1896 the Swedish Medical Society initiated the modern campaign against tuberculosis in Sweden. Considerable discussion then took place and led to the systematisation of practical effort and to the active presentation of hygienic instruction and the education of a national health conscience.[2] Royal support quickly followed. The late King Oscar II. with far-reaching wisdom devoted the national collection of a sum equivalent to £110,000, gathered from all sorts and conditions of his loyal subjects in commemoration of the twenty-fifth anniversary of his accession to the throne, to the erection of public sanatoriums for consumptives. With such a notable example of generosity and discriminating sympathy before the nation, Parliament and people supported the king with enthusiasm. The Riksdag voted substantial grants and the public imagination and practical interest were aroused.

In 1904 the Swedish National Anti-Tuberculosis Association was formed and under the patronage of the present king, Gustav V., and the presidency of Baron Gustav Tamm, formerly Chancellor of the Exchequer and Governor-General of Stockholm, has now developed into an exceedingly influential and active organisation with something like 23,000 members. It will be well to consider several of the anti-tuberculosis forces now at work in Sweden more in detail.

PUBLIC SANATORIUMS FOR CONSUMPTIVES.

As already indicated, through the munificence of the late King of Sweden and the loyal service of his Parliament three sanatoriums for cases of pulmonary tuberculosis came into being at the beginning of the present decade.[3] They are all under the direction of a competent board of management. Each is a thoroughly modern and up-to-date establishment, well equipped and efficiently directed. Halahult was opened in 1900 and Österas and Hessleby followed in 1901. Each accommodates 112 patients and in the first and the last this number can be increased in summer to 124. The advantages of having three distinct institutions in different parts of an extensive country like Sweden are so evident as to require no explanation. In their construction economy with efficiency has been in great measure attained, and maintenance charges appear to be very reasonable.

The sanatorium of Halahult (Fig. 1) near Ervalla is under the charge of Dr. C. E. Waller. The cost per bed is said to have been kr. 6100 (about £330) and the cost per day kr. 2.59 (about 2*s.* 8*d.*). The sanatorium of Österas (Figs. 2 and 3) is directed by Dr. N. E. Wadstein, and cost kr. 7200 per bed (about £390) and its maintenance is estimated as kr. 3.13 (about 3*s.* 5*d.*) per day. The sanatorium of Hessleby (Fig. 4) near Mariannelund is superintended by Dr. J. H. Tillman and cost kr. 5600 (about £303) per bed, and maintenance charges are returned as kr. 2.35 (about 2*s.* 6*d.*) per patient.

All these public or State sanatoriums are accomplishing an excellent work not only for the patients treated but for the country as a whole, maintaining interest in practical measures for the prevention and arrest of consumption and exercising a widespread educational influence.[4]

THE SWEDISH NATIONAL ANTI-TUBERCULOSIS ASSOCIATION.

This body, although only founded as recently as 1904, has accomplished a remarkable work. Through the courtesy and kindness of its able and enthusiastic secretary, Dr. Bertil Buhre, to whom I am indebted for much information and help most generously given, I was enabled to obtain an insight into the working of this well-organised and efficiently conducted and truly national institution. The association has central offices in Stockholm with a well-trained staff of lady workers and active representatives throughout the country.[5] As an educational, initiatory, and

[2] An excellent summary of recent anti-tuberculosis effort in Sweden is given by Dr. Bertil Buhre in "The Crusade against Tuberculosis in Sweden" in the *British Journal of Tuberculosis*, April, 1908.

[3] For full particulars of the work of the King Oscar II. Public Sanatoriums see the annual reports: "Meddelanden om Konung Oscar II.'s Jubileumsfond."

[4] Those desirous of obtaining full particulars of these public sanatoriums may be referred to a special report, "La Lutte contre la Tuberculose en Suède," prepared for the International Congress on Tuberculosis, held in Paris, 1905.

[5] The central offices of "Svenska Nationalföreningen mot Tuberkulos" are situated at 3, Norrlandsgatan, Stockholm.

FIG. 1.

The Public Sanatorium for Consumptives at Halahult, Sweden.

authoritative organisation its methods might well be studied by anti-tuberculosis bodies in this and other countries. I was greatly impressed with the admirable work which the Swedish National Anti-Tuberculosis Association is accomplishing. It issues an excellent journal, but it is to be regretted that it does not adopt the wise practice of giving abstracts of its papers in English.[6] This is a step which Englishmen and Americans would welcome and Swedes would have no cause to regret. From time to time under the editorial direction of Dr. Sture Carlsson valuable "Bulletins" are issued in French which we commend to the notice of all progressive students of the anti-tuberculosis problem.[7] The association issues numerous educational pamphlets, tracts, and booklets, arranges for the delivery of popular lectures throughout the country, establishes anti-tuberculosis exhibitions, encourages the establishment of nursing homes for consumptives and hygienic residences for tuberculous workers, advises as to the establishment of sanatoriums, and, in many other ways exercises a scientifically directed influence on the many and multifarious forms of activity, all of which have as their aim and object the prevention and arrest of tuberculosis.

One of the most praiseworthy features of the work of the Swedish National Association is the encouragement given to research work and the serious study of tuberculosis. No less than six scholarships have already been awarded to young medical practitioners enabling them to devote two months to a practical study of sanatorium methods by residence at one of the public sanatoriums. If some such inducement could be offered to recently qualified practitioners in this country to become acquainted with the routine of open-air treatment great benefit both to the profession and to the public would accrue.

It is impossible to describe the many forms of activity manifested by the Swedish National Anti-Tuberculosis Association, but brief reference must be made to at least two or three of the most practical and successful of the enterprises which this body by itself or in coöperation with others is conducting.

It may be well here to state that the financial resources of the association mainly arise from the sale of the very artistic and pleasing "anti-tuberculosis stamps," which are sold at post-offices and elsewhere at 2 öre (one farthing) apiece. These are placed on letters side by side with the regular postage stamps. The income accruing to the association from this source during 1905–07 amounted to a sum equivalent to £12,540. It is not without interest to speculate on the reply which the Postmaster-General would make to a request that the postal service of Great Britain and Ireland should follow the example of Sweden as regards "anti-tuberculosis stamps."[8]

ANTI-TUBERCULOSIS MUSEUM.

In Stockholm I visited the instructive exhibition organised by the National Anti-Tuberculosis Association in conjunction with the Association for the Protection of Workmen, the Central Union for Social Work, and the Central Union for Instruction in Temperance, and was much impressed with the sound common-sense and yet strict scientific precision exemplified in the formation of this popular hygienic museum in the heart of Sweden's metropolis. Here, by means of diagrams, models, pathological specimens, and health-preserving appliances, trustworthy instruction is provided for the people. On certain days lecture-demonstrations are given by medical men. The beneficial influence can hardly be exaggerated. Since the end of April, 1906, when the museum was first opened, something like 33,000 people

[6] "Svenska Nationalföreningens mot Tuberkulos Kvartalsskrift," edited by Dr. Sture Carlsson; published by "Svenska Nationalföreningen mot Tuberkulos," 3, Norrlandsgatan, Stockholm; annual subscription kr. 2.

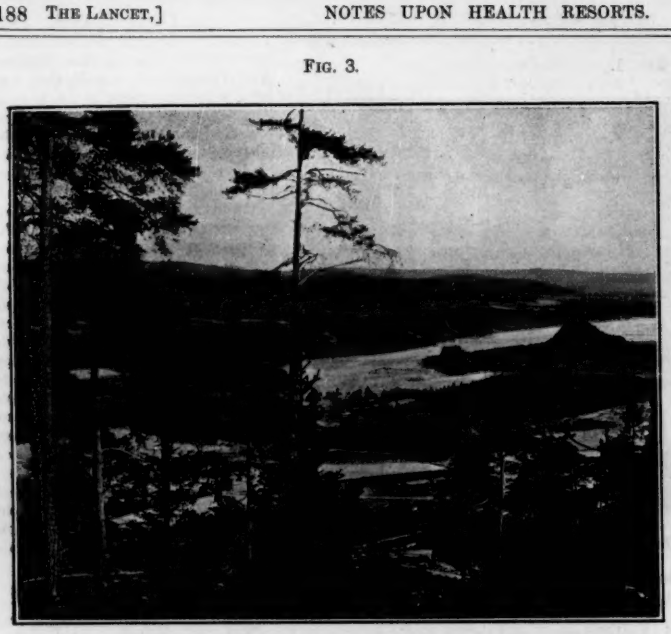
[7] "Bulletin de la Ligue Nationale Suédoise contre la Tuberculose," edited by Dr. Sture Carlsson. Special numbers prepared for the Fifth and Sixth International Conferences on Tuberculosis held at the Hague, 1906, and Vienna, 1907. Stockholm: Centraltryckeriet.

[8] Those desirous of learning more of the educational and financial advantages of "anti-tuberculosis stamps" should consult Mr. T. Gelhaar's "Rapport sur la créstion et la vente du timbre de bienfaisance de la Ligue Nationale Suédoise contre la Tuberculose pendant les années 1904–1907," in the "Bulletin de la Ligue Nationale Suédoise contre la Tuberculose," Stockholm, 1907.

FIG. 2.

The Public Sanatorium for Consumptives at Osteras, Sweden. Scene in Winter.

FIG. 3.



View from the Open-air Gallery of the Public Sanatorium for Consumptives at Osteras, Sweden.

have visited it. The value of the Anti-Tuberculosis Exhibition or museum has also been amply attested by the experience of America and Ireland and it is about time that like educational measures should be undertaken in England and Wales and Scotland.

THE CARE AND CONTROL OF THE CONSUMPTIVE WORKER.

Under the direction of Dr. Buhre I was enabled to inspect what is one of the most suggestive and encouraging of the medico-sociological experiments now being so successfully carried out according to Swedish methods. In the autumn of 1904 a tenement house was taken at Stockholm where a number of working men's families are housed and homed. The father or mother or both are tuberculous. All hygienic arrangements are strictly supervised. A trained nurse lives on the premises. The tuberculous subject has a separate sleeping room. Baths are provided free. Special care is devoted to the safeguarding of the children and a substantial meal of porridge or some such food is served out to each daily. The charge made for residence is fixed low, so that the consumptive tenant with necessarily impaired earning power may be able to meet it. I visited many of the families and found cleanliness, comfort, and apparent happiness prevailing in each home. In most cases the consumptive husband was away at work. This combination of supervision and practical assistance, real service and true sympathy, is a form of "present-care" and "after-care" which is to be commended to the consideration of medical officers of health and all others working for the alleviation of the hard lot of the consumptive worker and the protection of his oftentimes necessitous family. I am informed that in the Stockholm experiment no child living under the conditions described has been known to develop tuberculosis.

ANTI-TUBERCULOSIS DISPENSARIES.

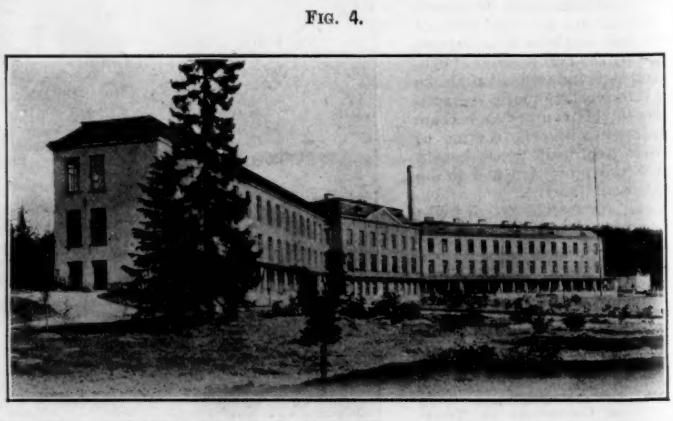
In Stockholm and in some other of the larger Swedish towns anti-tuberculosis dispensaries have been established. Through the kindness of Dr. Arnold Josefson I was able to see the work of the dispensary at Stockholm. It has been well organised and is efficiently conducted. The medical officer is adequately paid. A trained nurse, having proper remuneration, lives on the premises and visits the patients. The latter attend in the evening. There are also voluntary lady helpers who assist in the clerical work. The whole routine is scientific and serviceable. I have never seen an out-patient department in this country where the work appeared to be carried out so effectively. Although all necessary steps are taken to secure a complete diagnosis, assistance does not stop there. Skilled nursing and hygienic instruction follows the patient to his home. He is provided with the means whereby an attempt can be made to live the hygienic life. Where necessary tickets are given, in return for which milk, meat, and other necessities may be obtained. The services of the sanitary authority are available for disinfection and the like when required. Altogether to the outside inspector the system and conduct seemed almost perfect.

STATE AID FOR THE TUBERCULOUS.

Sweden is a democratic country, but the Swede is a far-seeing, educated, and highly humane administrator It seems quite in the nature of things that the State should play an active part in the conduct of the anti-tuberculosis campaign. Through the instrumentality of the National Association a Parliamentary committee was appointed towards the end of 1905 to undertake an inquiry into the best measures which could be taken by the State to arrest the spread of tuberculosis. A year ago the committee presented its report.[9] It was estimated that something like 30,000 consumptives existed in Sweden. In 1905 of the rural population 7206 died (1·77 per 1000) and of the urban population 2861 (2·41 per 1000) making a total death roll of 10,067 (1·91 per 1000 of the entire population). It was suggested that in order to meet this deplorable condition of affairs further hospitals or sanatoriums should be established in various parts of Sweden to provide for an additional 4600 patients, the State assisting by the formation of a capital fund equivalent to £275,000. From this loans free of interest for two years could be made to local bodies to the amount of half the total cost of

[9] "Betänkande och förslag af den utaf Kungl. Maj:t den 20 Oktober, 1905, tillsatta Kommitte för Verkställande af Utredning angående åtgärder för Människotuberkulosens Bekämpande," Stockholm, 1907.

FIG. 4.



The Public Sanatorium for Consumptives at Hesselby, Sweden.

the proposed buildings. It was also suggested that the State should be responsible for half the cost of maintenance of the patients. It seems probable that some such legislative powers may soon be obtained.

It may be noted that in 1905 the National Association appointed a committee of physicians, architects, and other experts to draw up plans, descriptions, and estimates for the establishment of suitable institutions for tuberculous patients. Its report published in 1905 is a valuable one, giving particulars of about 20 different kinds of establishments for consumptives, varying in size from 12 to 50 beds. This volume deserves to be known by architects and all interested in the construction of sanatoriums in this country.[10]

THE PROTECTION OF CHILDREN FROM TUBERCULOSIS.

The inhabitants of Sweden, like all progressive peoples, are rapidly learning that no solution of the tuberculosis problem is possible as long as children remain unprotected and when those tuberculously predisposed or affected are allowed to linger uncared for. Of recent years much attention has been concentrated on the care and control of young subjects. In Sweden, as among practically all civilised nations, the curse of tuberculosis falls heavily on childhood.

In Stockholm I visited the new building connected with the St. Göran's Hospital, where 50 beds have been provided for children with pulmonary tuberculosis. In connexion with the St. Göran's Hospital it should be noted that there is an admirably equipped Finsen light department for the treatment of lupus.

Tuberculous cases are admitted to several of the children's hospitals. In the Crown Princess Louisa's Hospital for Children in Stockholm many tuberculous little ones receive treatment. For such patients special establishments are coming into being. On the west coast of Sweden there are two permanent marine sanatoriums for children. One is at Skelderviken, the Crown Princess Victoria's Sanatorium, and another is situated at Styroö near Gothenburg. The former was opened in 1903 and is now undergoing enlargement and will when completed afford accommodation for 150 cases. The latter is quite new and provides for 70 children. Tuberculous diseases of bones and glands bring most of the inmates to these sanatoriums.

Mountain and forest sanatoriums for children are coming into being and seem likely to be even more advantageous than seaside stations. In connexion with the holiday colony movement several small sanatoriums have been erected. "Care of the Children" committees are doing excellent work in various parts of Sweden. The apparently healthy children of tuberculous parents are in some cases boarded out, the foster-parents' home and their charges being subjected to periodical medical inspection. Two establishments have been provided where children may be retained until a suitable home is found for them. The boards of health in the chief centres exercise effective control over the milk-supply. In Stockholm the vendors of "children's milk" must have complied with certain stringent regulations.

Several interesting experiments are being tried in the country districts of Sweden aiming at the better protection of both children and adults from invasion by tubercle. One of the most interesting is that at Neder-Luleä in the Norrbotten Läu and is being undertaken by the Gränges berg-Oxelösund Mining Company.[11]

[10] "Tuberkulossjukhus, deras Planläggning och Uppförande," Stockholm, 1906.

[11] For particulars see Dr. Buhre's article in the British Journal of Tuberculosis, April, 1908, p. 98. Also "Communication concernant l'essai Hygiéno-Social de la Lutte contre la Tuberculose dans la Commune de Neder-Luleä, prov. de Norrbotten tenté par la Ligue Nationale Suédoise contre la Tuberculose," by Dr. Emmerich Danielson, in the "Bulletin de la Ligue Nationale Suédoise contre la Tuberculose," Stockholm, 1906.

PRIVATE SANATORIUMS.

I have dealt chiefly with those public aspects of the anti-tuberculosis movement in Sweden likely to be of interest and assistance to workers in this and other lands. A brief reference, however, must be made to the development of private institutions for consumptives. Until recently most well-to-do tuberculous Swedes sought for assistance in the private sanatoriums of Norway and especially Germany. The climatic conditions of many parts of Sweden are, however, so admirably suited to the requirements of tuberculous subjects that, very wisely, local sanatoriums for private patients are being established. The two best of these are situated at Romanäs and Säfsjö. Both of these are situated in Smaland. Romanäs, as indicated by the accompanying illustration (Fig. 5), is a thoroughly modern and first-class establishment with accommodation for 60 patients. It is intended for the wealthy and well-to-do who until recently had been compelled to leave their own country to obtain adequate sanatorium treatment. Should this establishment desire to attract English patients it should at least provide an English version of its attractive prospectus.

FIG. 5.

The Private Sanatorium for Consumptives at Romanäs, Sweden. Scene in Winter.

There are numerous other private, semi-private, and public institutions dealing with tuberculous cases in Sweden, but no special advantage is to be attained by dwelling on them in detail.[12]

Sweden, although rich in natural resources, is a comparatively poor country. Its territory is far-reaching, means of communication are limited, and the population is scanty, and yet, in spite of all, this little nation, possessing a population not much greater than that of London, has accomplished much, and in a brief period, towards the solution of many of the most perplexing points connected with the great tuberculosis problem. The object of this article is not so much to praise as to urge other students of the subject, and particularly those in the British Empire, to consider the how and the why and the wherefore of Swedish methods as applied to anti-tuberculosis measures.

[12] For further particulars see an informing article by Dr. S. Dovertie on "La Lutte contre la Tuberculose en Suède" in the "Bulletin de la Ligue Nationale Suédoise contre la Tuberculose," Stockholm, 1907; also "La Lutte contre la Tuberculose en Suède," Upsala, 1905; and other publications of the Swedish National Anti-Tuberculosis Association, 3, Norrlandsgatan, Stockholm.

MEDICAL MAGISTRATE.—The name of Dr. J. J. Gorham, J.P. for Lancashire, has been placed on the commission of the peace for the county of London.

THE FRANCO-BRITISH EXHIBITION.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

SOME INDUSTRIAL, HYGIENIC, AND MEDICAL EXHIBITS.

THE succession of oblong-shaped halls forming a long, vast gallery stretching from Uxbridge-road to the Wood-lane entrance is the most technical part of the exhibition, and from that point of view the most interesting, at least so far as its French half is concerned. The English half lacks direction, order, and system. It is an anarchical show, for it is obviously devoid of any government. Each individual has done what he thought best in his own interests, so that the exhibits are in an inextricable muddle and it is quite a matter of chance if the visitor finds what he wants. This especially applies to the medical practitioner who would like to compare, for instance, the display of drugs, serums, bacteriological research, mineral waters, food supplies, and of life-saving social reform movements, laws, and institutions of the two countries. All these things are compactly placed together by the French exhibitors and the French Government in the four great halls or divisions nearest to the Wood-lane side. But the four halls nearest to the Uxbridge-road which are allotted to the British exhibitors are still to some extent empty. There remains a considerable amount of vacant space and what there is to be seen is certainly very mixed. There are some beautiful photographs and some fine specimens of printing, photogravures, engravings, &c. Close by is a very large exhibit of office furniture, drawers, shelves, pigeon-holes for the display of quick-filing systems by which letters, however old, can at once be found. These and other things are very interesting; but why place in their midst, what concerns us more, a large exhibit of a method of ventilating and ozonising inhabited dwellings? This is known as the Ozonair Ventilating System. Here a room has been built to show the process of ventilation. There is first, and next to the outer wall, a space something like a cupboard in which is placed a radiator that can be used either for warming or for cooling the air as it comes from the outside. Behind this radiator the inner wall has an aperture about a yard square in which moist matting is kept, and this acts as a filter for the air. The latter is drawn through both the radiator and the matting by a ventilating fan that revolves within the next compartment which serves as a mixing chamber. The moist filtering screen not only extracts from the air particles of grit, soot, and various substances but also the sulphurous acid and other gases. In the mixing chamber is placed the ozonair machine which is of such simple construction that it does not require an engineer to start or to manage it. The cost is set down at 1-600th part of a penny per 1000 cubic feet. The ozone is produced by an alternating electric current of high frequency acting on the oxygen of the air through the silent or condenser discharge. Where the necessary alternating current is not available a special device is provided and the construction of the machine is slightly varied. A motor transformer is supplied to change the continuous into an alternating supply and a regulator controls the amount and strength of the ozone produced. No chemicals are used, a supply of electricity alone is needed. According to analysis by Mr. E. G. Clayton, F.I.C., this apparatus produces pure ozone and there is no admixture of nitrous oxide with it.

Obviously ozone thus generated and at such small cost can be used for a great variety of purposes. At the exhibition we are shown how, with the aid of a motor fan, air can be drawn into a dwelling, warmed, filtered, mixed with ozone, and then propelled by the fan through travelling trunks or shafts to feed different parts of a building. This can be done not only to pump into dwellings or hospitals pure and bracing air, but it is also very useful for various industrial purposes. It is employed notably in brewing. Top fermentation as practised in English breweries means the addition to the yeast of a great variety of micro-organisms from the dust-bearing, heated atmosphere that wafts over the fermenting vats. One of the claims of superiority brought forward by the Munich brewers is that they resort to bottom fermentation in an atmosphere which converts all moisture into snow and sterilises the air. With the ozonair the air can be purified even though it is hot. It is also very useful for the preservation of food and is actually used in offices overlooking tan yards and fish markets where the atmosphere may become very foul.

It will be seen that this exhibit opens out many interesting problems, but it stands by itself facing the show made by the Royal Harrogate Baths and Colman's mustard. The former must be commended for its mass of literature in French and German. It does seem absurd for English exhibitors in an exhibition to which there are so many French and also German visitors to confine their printed explanations to the English language. It would be still more foolish for French exhibitors to come here unprovided with English translations of their explanatory literature. Although we welcome and are delighted to see so many people from the continent at the exhibition, the great majority of visitors are obviously British and but a small proportion of the latter understand French. Again, there are many exhibits that would be very important and very interesting if their meaning and use were explained but they present nothing very striking to the eye. Thus a mineral water may have excellent properties, but a pyramid of bottles containing mineral water is not an exciting spectacle. This is now better understood and each water-cure station endeavours to exhibit not merely bottles but photographs, paintings, and even panoramic views of the springs, the surrounding mountains, the hotels, the Casino, the sports—in fact, all that is likely to attract not only invalids but holiday and pleasure seekers to the mineral springs. Harrogate is following this example and at the exhibition views can be seen and full details obtained of its 50 different springs and the great variety of treatment practised there.

The British Social Economy Section cannot, it is to be hoped, be finished, for there is not much to be seen. There is a large space devoted to apprenticeship where little or nothing is being done. The Garden City and the Tenants' Co-partnership Association have very good exhibits and contribute a useful chapter to the great housing problem. Close at hand is the Tocah lounge, deck chair, hammock, and bed. This is an ingenious device capable of supporting a weight of 50 stone though itself only weighing 21 pounds and costing no more than 21*s*. It can be folded up quite flat or opened out for any of the above purposes. Then there is another clever device—namely, Heatley's commode bed which has already been described in these columns.[1] The idea consists of a hole in the centre of the mattress and the bedding. By a lever attachment under the bed the bed-pan can be raised up to the patient without disturbing him in any way whatsoever. This is a great comfort and convenience to patients, especially if in an exhausted condition, and renders less objectionable the trying duties of sick nursing. The whole process is fully shown at the exhibition and has attracted much favourable commendation.

A step further and we are in the British sporting section, and here there is an interesting portable electric lamp with a hermetically sealed battery which only costs 4½*d*. to recharge, though it will burn for six hours. It consists of a small wooden case to which different sorts of lighting apparatus can be attached and these are illuminated by turning the case upside down. It is exhibited with Ames's folding berth, by which the sides of a berth are so arranged with hinges that they can be converted into seats or tables, thus saving room on board ship. Immediately opposite are fishing rods, tackle, and flies, and exhibits of culture beds for oysters, with sporting guns and jam, sauces, baking powder, the whole flanked with Scotch and Irish whisky—a somewhat remarkable hotch-potch.

In the third hall of the series, devoted to British social economy, near the exhibit installed by the corporation of Harrogate, the Salvation Army has a stand which illustrates some of the results of its rescue work. The Institute of the Blind also has an exhibit of articles made by its inmates. In Hall 4 are stands showing British foodstuffs and beverages. Among the exhibitors of these are Brand and Co., Limited, London; L. Noël and Sons, Limited, London; J. S. Fry and Co., Limited, London; Buchanan, Glasgow and London; and Colman, Norwich. The part allotted to French exhibitors comes next in order, and the first French hall to be entered is devoted to the section of social economy. The exhibits in this hall are, as I have said, full of interest and instruction, especially as regards the excellent and business-like manner in which the statistics and information relating to various French societies concerned in work for the moral and physical improvement of the race are arranged. The campaign against tuberculosis is being actively waged in

[1] See THE LANCET, Dec. 14th, 1907, p. 1693.

France at the present time and many French societies engaged in the crusade, including l'Association Centrale Française contre la Tuberculose and La Tuberculose Humaine Société des Dispensaires Antituberculeux Français, show charts, diagrams, and literature which afford convincing evidence of the painstaking energy and the splendid organising genius which characterise their work. Another exhibit of great interest to English medical men and social reformers at the present time is that of the society known as l'Institution d'Allaitement Maternel which has its headquarters at 9, Rue Jean-Baptiste Dumas, Paris. This society was founded and supported solely during the first years of its existence by Madame Béquet de Vienne, but latterly many benevolent ladies of the upper classes in France have associated themselves with the enterprise. The society was founded to provide wet nurses for those women who through poverty or other causes are unable to suckle their own infants. In 1892 the society inaugurated the first refuge in France to receive pregnant women and in 1904 a second refuge was opened. Finally, in 1907 the association opened a third house as a home in which convalescent women are received when they leave the maternity hospitals. The different societies which conduct the struggle against alcoholism in France, headed by La Ligue Nationale Française contre l'Alcoolisme, are well represented by means of diagrams and literature, and it is plain that the work is being carried on systematically and thoroughly. There is a full exhibit by the Pasteur Institute of Paris which affords a historical illustration of Pasteur's own work and shows the nature of the work now being undertaken by the institute. There is an interesting contribution from the French Popular League for making Sunday a day of rest, and the French Association for the Blind has an instructive stand. The French Agricultural, Horticultural, and Arboricultural section includes exhibits relating to milk and apiculture. The French Alimentation section, with a subsection devoted to drugs, sanitation, and surgery, is the next to be reached, and is arranged with admirable effect, as indeed are nearly all the stands in this part of the exhibition. The makers of French chocolate are well to the fore, comprising such well-known names as Menier and Félix Potin. The display by the makers of beverages, alcoholic and otherwise, is an excellent and artistic one, that by Martell being especially noticeable. Félix Potin exhibits samples of champagne as well as of chocolate. In this section the Société des Eaux Minérales de Contrexéville has a stand showing the natural water of the Pavillon spring, which is stated to lose little or none of its efficacy when bottled, even though kept for a considerable time. The Aix-les-Bains Établissement Thermal has also an exhibit. The French drug section is very complete and beautifully arranged, and firms such as those of Le Midy, M. Robin, Bertaut-Blanchard Frès, Galbrun et Fils, Fumouze et Cie., F. Comaret et Fils et Cie., J. Bachelet, all of Paris, are well represented by means of drugs, instruments, and other medical and surgical accessories.

This short account by no means exhausts the exhibits of sanitary and medical interest. It takes, for instance, no account of the Science Section, but should suffice to show that the exhibition at Shepherd's Bush is worth a visit by any member of the medical profession, if only for the sake of its features which concern his special interests.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The University.

THE summer term reached its end on Saturday last and was fitly concluded in the usual way by the graduation ceremony which took place in the town-hall. The hall lends itself splendidly to the function and there was a brilliant display of pretty hats, dresses, and faces, which greatly increased the charm and interest of the ceremony. The undergraduates were less noisy but not more witty than usual. Once or twice only they scored a hit, but with a list of names which offered many opportunities for humorous remarks they missed their chances again and again and so far as they were concerned the proceedings were flat. The graduates who were presented by the deans of the various faculties numbered 115. Of these, 12 graduated in medicine, 59 in science, 38 in arts, six in commerce, and one in dentistry.

The Birmingham Institution for the Blind.

In the report which was presented at the annual meeting of the friends and supporters of the above mentioned institution it is stated that during the year 727 cases were assisted, valuable additions were made to the kindergarten school, and two large new workshops were built. Obviously, therefore, still more work will be found for blind workpeople, who numbered 100 when the year closed, but when the new shops are at work that number will be considerably increased. During the year the trade department sales amounted to £12,036, or £1080 more than last year, and £3772 were paid in wages and augmentation of wages. The annual subscriptions received during the year increased by £104 and totalled £1149, whilst the donations amounted to £1826, or £353 more than in the previous year, but the expenses also were greater, and in spite of the fact that £1448 received from legacies was used to meet them the deficiency amounted to £133.

Medical Examination of School Children.

Dr. J. H. H. Manley's report upon the medical inspection of the school children of West Bromwich has, I believe, the honour of being the first complete report upon the subject, at all events in this district. The report is based upon the experience gained by the inspection of 1400 children scattered in 20 schools under a wide diversity of conditions. It contains much food for thought and is not cheerful reading, for it discloses a regrettable condition of affairs and emphasises the slow progress of the mass of the people under the methods of education to which they have been subjected, for whatever else they may have learned it is perfectly clear that they have been taught neither simple methods of keeping themselves and their children clean nor the necessity of giving their children the advantage of the medical assistance which is placed so lavishly at their disposal. Dr. Manley has not found that the parents offer any great amount of opposition to the examination but they pay little attention to the advice given to them and evince very little disposition to attempt to improve the condition of their children. The average height of the children varied from 40 to 42 inches for the boys and a very little less for the girls, and the weight of the boys was one pound an inch, whilst the girls were somewhat below that ratio. There were 29 cases of discharge from one or both ears, 44 cases of squint, 138 cases of enlarged tonsils, and 169 cases of defective teeth. Traces of vermin were frequently present, the clothing was often very poor, and the boots were in a worse condition than the clothing. In Dr. Manley's opinion 54 children were permanently defective and beyond hope of complete cure; they represent a total of 4 per cent. of the children of 1902. Amongst them he includes eight cases of permanent physical defect, spinal curvature, club foot, genu valgum, and hypospadias; six cases of early pulmonary tuberculosis, four cases of permanent eye defects, and five epileptics. 16 children were mentally deficient and 28 cases were set aside for special re-examination. Dr. Manley believes that, sooner or later, the education authorities will be forced to recognise that at least 1 per cent. of the children are mentally below the normal standard even when that standard is itself not high.

July 14th.

NEWCASTLE-UPON-TYNE.

(FROM OUR OWN CORRESPONDENT.)

The University: Honorary Degrees.

THE June convocation was held in the Castle Hall, Durham, on the last day of Easter term, the Warden, the Very Reverend Dean Kitchin, D.D., presiding. The first business of the convocation was the conferring of honorary degrees upon a number of well-known persons. Among those to receive the degree of D.C.L. *hon. causâ* were Mr. Frederick Page, professor of surgery in the University, and Dr. George R. Murray, now professor of medicine in the Victoria University of Manchester and formerly professor of comparative pathology and bacteriology in this University. The conferment of the honorary degree of D.C.L. before leaving Newcastle was a very graceful recognition and appreciation on the part of the University of

the good work which Dr. Murray has done in this city and of the position which he holds in the medical profession in the country. Mr. Clement Stephenson, F.R.C.V.S., H.M. Chief Veterinary Inspector for Northumberland, was presented for the honorary degree of D.Sc. by Sir Isambard Owen, who in his speech referred to the invaluable work done by Mr. Stephenson in stamping out epidemic disease among animals in the North of England some 40 years ago, and concluded by reminding those present that it was through Mr. Stephenson's exertions that the chair of Comparative Pathology was established in the University. Mr. Stephenson was not content with merely seeing the chair founded, but has always taken the keenest interest in its welfare and development, and it was, in fact, his own private generosity which provided the money for equipping the laboratory in the first instance. It is no exaggeration to say that no honorary degree has been more well deserved and none more popular than that conferred upon Mr. Stephenson. The city council in sending him a letter of congratulation merely gave expression to the general feeling. Mr. Stephenson is in the proud position of being the first member of the veterinary profession to receive an honorary degree of D.Sc.

Anthrax-infected Meat in Newcastle.

At the Newcastle assizes last week, before Mr. Justice Grantham, a butcher brought an action against a coöperative society for damages for breach of warranty and alleged negligence. From counsel's statement it appeared that the defendant society, through its manager, purchased some cattle in the Newcastle market which were taken away for the purpose of killing. The next morning one of the bullocks was found dead in its stall. Under the impression that the beast had hanged itself the manager had the carcass cut up. It was noticed by the butchers that the meat was high-coloured. The internal organs, which were thrown away, were not normal in any sense, the spleen being much discoloured. The four quarters were nevertheless taken to a well-known mart in Newcastle and were passed by a veterinary surgeon and two inspectors in the market. To each of these persons the defendant society's representative explained that the animal had either hanged itself or broken its neck. There was no evidence that it had broken its neck. The beast was subsequently found to have died from anthrax. The plaintiff bought some of this meat and sold a part of it to one of his customers who, as a result, contracted anthrax and became very ill. The plaintiff alleged that his business suffered in consequence. The defence argued that there was no express warranty, and to be an implied warranty the purchaser must rely not upon his own judgment but upon the skill and judgment of the seller. In this case the purchaser relied upon his own judgment entirely. Further, there was no negligence because there was no statutory duty upon the defendants. The damages were, it was argued, too remote. No evidence was called in defence. His lordship decided against the defendants upon the points of law and characterised the conduct of the society's manager as most reprehensible. The jury awarded the plaintiff £150 damages and a stay of execution was refused. It was given in evidence that one of the butchers who stripped the carcass became infected with anthrax and died from the disease. The defendant society had voluntarily compensated the butcher's widow and had paid a claim for £125 made by the plaintiff's customer who suffered from anthrax as the result of handling the meat.

Newcastle Corporation and Barrasford Sanatorium.

At its last meeting the city council had before it the report of the sanitary committee relative to the reservation by the corporation of beds at the Northumberland Sanatorium for Tuberculosis at Barrasford for the benefit of the inhabitants of the city. The report stated that the sanatorium authorities were prepared to agree to an arrangement whereby 20 beds should be allotted to patients sent by the Newcastle corporation for an annual payment of £100 per bed, that is £2000 in all, the corporation making no contribution towards the capital cost of the hospital. During a long discussion several points were raised both for and against the adoption of the report. Obviously the first question was, "Where is the money to come from?" This seemed a very reasonable question when it is remembered that in March the sanitary committee had its estimates sent back so that they might be reduced by £4000. In support of the recommendation, Dr. Newton, the chairman of the sanitary committee, pointed out that 50 people are dying monthly in Newcastle from tuberculosis and that the city was doing nothing to mitigate the conditions. Another member of the council gave it as his opinion that they would need 150 or 200 beds if the institution was to be of any service to the city. Ultimately the report was adopted by 44 to 10, three members refraining from voting. It is a little difficult to understand how the 20 beds now available for the ratepayers of Newcastle can be expected to be of any material use in mitigating the conditions referred to by Dr. Newton. The sanatorium is intended solely for the reception of incipient cases of tuberculosis and in order to produce any permanent material benefit it is necessary that the treatment should extend over many months—a year or 18 months or even more. The results (published in the first annual report and already referred to in these columns) of a three or four months' stay at Barrasford were hardly encouraging; but it is the general experience. It cannot be maintained that the public health of Newcastle will materially benefit from the removal from the city for short periods of time of an exceedingly small percentage of the total number of persons suffering from tuberculosis, and those not by any means severely infected. A death-rate of 600 per annum necessitates the assumption that a very large number are infected and, in fact, one knows it is so. How, then, are the 20 or 40 or even 60 cases to be selected for treatment? Why should some receive treatment and others not? Tuberculosis will most certainly have to be taken in hand, but the attempted cure of a very minute fraction hardly appeals to one as the sound method of attacking the problem. Money obtained from the rates should be devoted only to purposes whereby at least the majority will profit. The Newcastle sanitary committee and its medical officer of health, Dr. Henry E. Armstrong, have always kept well in the forefront of sanitary administration and the city is to be congratulated upon the manner in which its sanitary affairs are conducted; moreover, it is universally agreed that the time has come when the spread of tuberculosis should be seriously considered and means taken to prevent the dissemination of this dreadful disease. And it is undeniable that money will be required for the purpose. So far the corporation will be supported by everyone. But it is the particular method which the corporation proposes to adopt in attempting to solve the problem which meets with disapproval. If the rates are to be used the purposes to which the money is devoted must be such as will lead to the good of all. The corporation would do well to consider the problem in the light of the most recent knowledge, to prepare a plan, and then to put it in operation to the extent to which it feels itself justified at the moment. It must be an organised campaign to be successful. A feeble attack here and another there without a general scheme will be worse than useless.

July 14th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Medical Inspection of School Children.

FOR some years the medical officer of health of Shrewsbury has been Mr. Maurice Gepp who held a similar position in connexion with other urban and rural districts in Shropshire. As Mr. Gepp was not disposed to undertake the inspection of school children in the county town he resigned his position as medical officer of health in order that a whole-time official might be appointed who could undertake not only the ordinary duties of medical officer of health but those also of police surgeon and school medical officer. The corporation has now made this appointment at a combined salary of £400 per annum, a sum which was reluctantly sanctioned by the Local Government Board on the understanding that the holder of the office should be free to undertake certain public health work apart from the special duties which he was appointed to perform. The corporation of the city of Hereford proposed to follow the example of Shrewsbury, but in deference to the wishes of the Local Government Board it will probably appoint an officer at a salary of £500 per annum with a full claim upon his services.

Training of Midwives in Swansea.

Early in 1907 the Swansea corporation as the local supervising authority under the Midwives Act appointed Dr.

Frederick Knight, a general practitioner in the town, to deliver lectures on midwifery to the Swansea midwives. A report upon the work accomplished during the first year has just been published. Three courses of lectures were arranged for the year and the average attendance at each course was 12. They have been sufficiently successful to induce Dr. Knight to recommend the establishment of a lying-in hospital for the borough and neighbourhood. The advantages of such an institution he considers would be that midwives and monthly nurses would receive practical training in the principles of antiseptic midwifery, cases of difficulty and danger to the mother and child would receive the benefit of the best medical skill, and poor women living amongst insanitary surroundings would be delivered among clean and healthy conditions. It appears from the report that of the midwives at present practising in the town about 90 per cent. are untrained and are only on the register on the ground that they were in practice before the passing of the Midwives Act. The corporation will be well advised if it gives effect to Dr. Knight's suggestion that at least 12 of these midwives should have free admission to his lectures and demonstrations each year.

July 14th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Medical Education of Women in Edinburgh.

ON July 8th a public "conference" was held in the Freemasons' Hall, Edinburgh, on the subject of the Medical Education of Women. This so-called "conference" is part of an agitation started and fostered by certain members of the Scottish Association for the Medical Education of Women or on its court. The position of that association was dealt with in THE LANCET of April 4th, p. 1034. The object is to try to force the University court to open the medical classes inside the University to women students. Many arguments and statements are being used with the object of stimulating public feeling and the hope may be expressed here that someone who knows the facts will bring them prominently before the public. Practically the whole extra-mural school, many of the professors if not all of them, and most if not all of the members of the University court, are strongly opposed to a mixing of the sexes in the medical curriculum. The agitation is for mixed classes and there seems to be no prospect of that being obtained. It is needless to say that there is no objection to the medical education of women, and no one would object to seeing a medical college for women in Edinburgh, housed in the best of buildings, and possessing the most elegant of class-rooms, but this is not what the agitators want. They want to rub shoulders with the men in the same systematic and other classes and in the wards of the infirmary, but so far as the future can be predicted they are not within sight of being allowed to do so.

British Red Cross Society: Aberdeen Branch Formed.

A meeting convened by Lord Provost Sir Alexander Lyon was held on July 2nd for the purpose of forming an Aberdeen branch of the above society, and to elect office-bearers and a committee. Among those present were Sir George Beatson, chairman of the St. Andrew's Ambulance Association, who, on the call of the Lord Provost, explained what was meant by Red Cross work. Briefly, he said, it was civilian aid to the sick and wounded in time of war. Theoretically, perhaps, the Government was responsible, but practically, especially after severe battle or prolonged warfare, it would be beyond its power. The expense of keeping a medical service equipped to cope with those great emergencies would be ruinous for this country, therefore it was a tacit understanding that in the larger campaigns civilian aid was asked for. The question then was, "Is civilian aid reliable?" He thought after looking back at South Africa that they had in their own recollections absolute proof that it was. Discrimination was needed, however, in accepting civilian aid as it might be the means of introducing undesirables, such as spies, into a campaign, therefore civilian aid must be given through proper channels. In 1864 there was established a Geneva Convention which drew up a series of articles forming a sort of diplomatic agreement between all civilised countries as to the treatment of the sick and wounded. These articles neutralised all medical corps and all civilians in connexion with the work, and adopted a red cross on a white ground as a symbol of the civilian aid in time of war and the name of the Red Cross Society. The British Red Cross Society was formed four years ago and had since formed branches in Canada, New Zealand, Ireland, and Scotland. Scotland had therefore before it the duty of forming committees throughout the country so that they might have an institution able to furnish workers in time of war and need. It was not generally understood that assistance in time of war could only be sent through a Red Cross Society by Scotland; if they had not a branch and sent a hospital it would be refused and they would be told to send it through a Red Cross society, and hence the necessity of forming a branch and having committees all over the country. He thought he might safely appeal to them that such a committee was called for in Aberdeen. The Lord Provost moved that a branch be formed and Professor A. Ogston seconded, saying that in every country was seen how money flowed into the coffers which were intended to benefit those who were in need during war. They saw it in Britain, Russia, Germany, France, and Japan, yet anyone who knew how campaigns were conducted knew that the money was mostly thrown away. In Britain during the time of the South African war the money was poured into the coffers of the National Aid Society and it was perfectly apparent that it had been wasted. There was, no doubt, a great deal of good done with it, but those at the front, where one could see and appreciate actually what amount of benefit went to those who most needed it, were bitterly disappointed. A great deal of it was usefully spent on the establishment of hospital ships, but it did not do anything like the amount of good that it ought to have done. Professor Ogston referred to Germany where all voluntary aid had to go through the military authorities and when money came in or assistance was offered at the time of the outbreak of a campaign it was all provided for through a certain official of the German army. That was a thing Britain ought to imitate. On the motion of Principal Lang an influential committee was appointed, the motion being seconded by Mr. Adam Maitland and agreed to unanimously.

July 14th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Tuberculosis Prevention (Ireland) Bill.

IN my last letter I summarised the official recommendations recently made by the Royal College of Surgeons in Ireland concerning this Bill. Two other memoranda upon the subject have been issued. The first expresses the views of the Royal Academy of Medicine in Ireland, which were adopted as resolutions at a special general meeting held on July 9th to consider the matter. They coincide practically with those expressed by the College,[1] the compulsory notification of tuberculosis and other infectious diseases being recommended. A long resolution seeks to place the responsibility of notification on the patient's "relative or attendant, or the person responsible for the dwelling in which he happens to be," and only if there should be none such upon the medical man in charge of the case. The latter should be entitled to half-a-crown for signing the certificate, which must be forwarded with the notification by the "responsible person." It is further recommended that the duty imposed on the Local Government Board of giving effect to certain provisions in the Bill should be mandatory and not permissive, and that the Board should be advised by a committee of practising physicians and surgeons. The Royal Academy of Medicine in Ireland has appointed a committee to watch the passage of the Bill through Parliament. A group of resolutions very similar in their object has been adopted by the Council of the Leinster Branch of the British Medical Association, which also approves of the compulsory notification of certain forms of tuberculosis. One of its recommendations is that all premises vacated by a patient suffering from pulmonary tuberculosis should be disinfected. The protocol of the academy, to which I have

[1] THE LANCET, July 11th, p. 121.

referred, goes further and demands that no vacant tenement or premises shall be re-occupied until disinfection has been carried out by the public health authority although neither tuberculous nor other infectious disease may have been reported to have occurred therein. It makes no recommendation concerning the raising of the funds necessary for the adoption of such a counsel of perfection.

Rainfall in June.

In the north of Ireland rain fell in June on 17 days to the extent of 3·89 inches, making 22 inches for the year, which is greater than in 1907 (21·94 inches) and greater than the average for the past 33 years (17·82 inches).

A Babies' Club in Belfast.

The Lord Lieutenant of Ireland paid a flying visit to Belfast on July 8th to open the Babies' Club, established by the infantile mortality committee of the Belfast branch of the Women's National Health Association of Ireland. It was originally intended that Lady Aberdeen should perform the ceremony, but at the last moment she was unfortunately prevented by indisposition and the Lord Lieutenant kindly took her place. On arriving at the club in Divis-street, one of the most populous districts of the city of Belfast, the Lord Lieutenant was received by Lady Byers (chairman of the infantile mortality committee) who presented the members of the committee to His Excellency who then made an inspection of the buildings. He first visited the room where are placed the various appliances, the weighing machine, cards to denote the progress of the infants, the proper kind of bottles with arrangements for keeping them clean, methods for keeping milk clean and free from contamination, various kinds of infants' clothes, cheap cradles, &c. He then visited the room where were assembled some 40 to 50 women with their babies who have regularly come to the club. Subsequently a meeting was held in a large marquee in the grounds behind the club, the Lord Mayor presiding, when there was a very large attendance, including the Lady Mayoress and the Dowager Marchioness of Dufferin. After the meeting was opened Mrs. W. Calwell (honorary secretary of the infantile mortality committee) and Mrs. Robert Campbell (honorary superintendent of the district) gave interesting accounts of the work of the club which the Lord Lieutenant formally opened, and in a most appreciatory speech spoke of the value of the club as a development of the great scheme formulated by Lady Aberdeen. Sir John Byers, on behalf of his wife, conveyed the thanks of all present to His Excellency, and a vote of thanks having been accorded to the Lord Mayor for presiding, those present were entertained at tea. This experiment of a babies' club is an attempt on the part of ladies interested in health problems to grapple with the scourge of infantile mortality, and it is interesting to note that of the 152 babies on its books so far there has been only one death. The club provides a centre where working women can bring their babies week by week to obtain expert advice as to their progress, treatment, &c. The infants are carefully weighed, and while all mothers are encouraged to nurse their children directions are given by which, if bottle feeding is to be employed, the babies shall run the minimum of risk, and in cases of absolute necessity a pure, clean, non-tuberculous milk is supplied. So popular has this club, which is the first of the kind opened in Ireland, become in Belfast that another has been opened in the same city. It is of interest to note that Belfast has been so far the only city in Ireland to adopt the Notification of Births Act.

Dairies and Cowsheds Order.

The Local Government Board is experiencing great opposition to its "Dairies and Cowsheds Order." For example, the Cookstown rural council gave as a reason for not putting it into force its cost, to which the Local Government Board in reply asked the council to specify what provisions it would like modified. The council stated in return that it believed the effect would be to drive farmers from supplying the coöperative creameries. The Local Government Board sent one of its medical inspectors to meet the council on July 11th and to explain the clauses of the Order, one of which (Article 24), he said, gave the local authorities power, subject to the approval of the Local Government Board on inquiry, to modify any of the regulations which were too restrictive or objectionable. It is becoming clear that this Order will be a failure because of the laxity and objection on the part of local authorities to adopt and enforce its provisions. To secure a clean and uncontaminated milk-supply such an Order must really be made compulsory and the duties of cowshed, cattle, and milk inspection must be carried out by a staff of qualified men directly under the control of the county councils. It is interesting to note that at a meeting of the Urban District Councils Association held at New Brighton on July 11th, attention was drawn to the failure of the "Cowsheds, Dairies, and Milkshops Order" in England (just as is occurring in Ireland) and a motion was adopted demanding that the Order should be made compulsory.

A Singular Accident.

A fatality occurred at Portmarnock on July 12th the circumstances of which were very singular and of medico-legal interest. A motor-car was passing from Portmarnock towards Baldoyle. Two young men were cycling in the same direction and the car came up from behind, after a turn in the road had been passed. When the motor had passed them by a few yards one of the cyclists was seen lying with outstretched arms on the road, face downwards, with an uninjured bicycle behind him. No mark of collision appeared on either motor or cycle when carefully examined. The conclusion arrived at by the coroner was that the deceased seemed to have taken a wide sweep at the corner and on hearing the approaching motor-car and apprehending sudden danger became confused and, in the anxiety to get clear, threw himself off the bicycle and came violently into contact with the ground. The coroner firmly stated his opinion that the car did not pass over the deceased and that he did not see that any blame attached to the driver, who had received very high testimony from his mistress. He had never investigated a case in which there was less reason to suggest negligence. Immediately on the occurrence of the accident Dr. William F. Ahern was summoned but although he came without delay death had occurred before his arrival. Deceased had bled from the mouth and nose and there was a large scalp wound high up on the right side of the head; death was due to fracture of the base of the skull. The jury returned a verdict in accordance with the medical opinion and the view expressed by the coroner, exonerating the driver of the motor from all blame, while expressing the deepest sympathy with the relatives and friends of the deceased.

July 14th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Second Congress of Medical Practitioners at Lille.

IN my last week's letter, which I despatched the day after the Congress was dissolved, I spoke in a general manner of several matters discussed by the delegates. These gentlemen represented no fewer than 9743 practitioners and the average number present at each sitting was about 500. Amongst the remaining business which they considered I may mention the report of M. Maire on the methods of selecting the medical staffs in vogue in French, English, and German hospitals. In the last two countries the qualifications of the candidates, the original work which they have done, and the position which they hold in the scientific world exercise great influence in their nomination to the medical or surgical staffs of hospitals, whilst in France the choice is made as the result of examinations, the preparation for which takes up most of the candidate's time until he is 35 or 40 years of age and which chiefly entail feats of memory. M. Maire considers that the physicians and surgeons in charge of the various departments should be elected at each hospital by its own administrative committee from a list of several candidates drawn up by a meeting of the medical staff. The internes should be similarly chosen amongst young recently qualified men. The Congress accepted a resolution in these terms, adding that in small towns the hospitals should be staffed by the medical practitioners of the towns themselves, under the control of the medical associations, each man retiring in turn at the end of three years' service. Other points discussed were the autonomy of the medical schools and faculties. M. Le Fur showed the great advantage to the latter of such a system, comparing the actual situation in France

to that in Germany, England, Italy, and the United States. Amongst the many benefits which would accrue from autonomy would be the independent control by each faculty of its expenditure. The nomination of professors by the faculties, their payment by those bodies and by their pupils, the enlargement of the teaching staffs, and the institution of *privat-docenten* all came under consideration, as also did the following subjects: the development of free medical instruction; the teaching of the special subjects; post-graduate courses; the arrangement of visits by teachers and students between the different French and even foreign faculties; the re-arrangement of terms and examinations in a practical manner and the improvement of the standard of the latter; the admission of practitioners to the examining bodies; and the creation of a supreme medical council by the amalgamation of representatives of the teaching bodies, the practitioners, and the students for the purpose of considering all matters connected with medical education.

Pragmatism in Medicine.

On June 24th M. Louis Rénon lectured before the Therapeutical Society upon Pragmatism, which he defined as being the knowledge founded upon experience of every sort of results, no matter whether we owe them to tradition or to the most recent science; in fact, it is empiricism allied with science, or rather empiricism using every means which science puts at the disposal of medicine. As applied to therapeutics, pragmatism, which is of its very nature antisystematic and antidogmatic, is a reaction against the excesses of theoretical reasoning which result in a sad confusion of method in medicine, and by heaping up fallacies drive its practitioners to indifference and scepticism and to unmasterly inactivity. The pragmatic system of therapeutics utilises all methods of treatment which afford relief to sufferers, whatever be their objects, and judges them entirely by the results which they produce. It goes for suggestions to ancient methods, to all the pharmacopœias, and to all the sciences, not neglecting even the most trivial things, and it directs its efforts to the individual needs of each case without subscribing to any convention. It makes free use of psycho-therapy, being convinced of the enormous influence of mind over body. Finally, M. Rénon claims that pragmatism is in no sense a reaction in the search after medical truth, but is rather an evolutionary force directed towards the scientific solution of the countless problems of medicine.

Local Anæsthesia.

M. Reclus, who was the ardent apostle of cocaine and local anæsthesia in France, has presented a report to the Academy of Medicine upon a memoir by M. Couteaud on the use of cocaine and stovaine in combination, and has taken the occasion to review the present state of our knowledge of local anæsthetics. He recalls the brilliant record of cocaine and the essential principles which should govern its administration—namely, the horizontal position of the patient, the making of the injections along the line of the incision, and the careful regulation of the dose in relation to the quickness of absorption. The introduction of stovaine was a great advance upon cocaine, for it is much less toxic. M. Reclus and his pupils have done 2000 operations with it without a single fatality. But the latest of the local anæsthetics, novocaine, has marked a still more considerable advance, for it is half as toxic as stovaine and four times less so than cocaine. It can be said that every needful degree of anæsthesia can be obtained with novocaine for as long a period as is necessary and without fear of any accident, as M. Reynier pointed out in an earlier communication to the Academy. M. Reclus finishes by condemning in one word the employment of spinal anæsthesia, but brings forward very prominently the advantages of the local method, which has now become free from danger and allows chloroform to be dispensed with in a large number of operations, even in such major procedures as the radical cure of hernia and certain laparotomies where a general anæsthetic depresses the patient and may even endanger his life.

Canal Boats and the Propagation of Infectious Disorders.

Dr. Chantemesse read a very interesting note before the Academy of Sciences on July 6th upon the dangers of the propagation of infectious maladies by canal boats, which not only are supremely unhealthy dwellings but are all the more dangerous in that they are migratory. He pointed out that the last great epidemic of scarlet fever in Paris was brought in Belgian boats using the northern canals. Unhappily, the law has made no provision for the inspection of these vehicles of infection. This gap in the sanitary defence of the country requires filling urgently.

Subways and Public Conveniences.

The municipal council of Paris has passed a resolution inviting the Government to consider the construction of subway crossings under the public thoroughfares where the traffic is most congested and to provide in these subways public conveniences, some to be used free and others by payment.

July 14th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Infection of a Whole Laboratory Staff with Bacillus Mallei.

A REMARKABLE accident happened recently at Czernowitz in the laboratory for examination of food owing to neglect of the prescribed precautions. The director of the institute, a pathologist employed also at the veterinary hospital, made some experiments with a culture of bacillus mallei, which he supposed to have been killed by carbolic acid. He was centrifugalising the culture at a very high velocity when the glass tube burst, scattering its contents all over the room. The fragments of glass were picked up from the floor by the five or six persons present. No special precaution was taken unluckily, as it was asserted that the use of an antiseptic had made infection out of the question. Nevertheless, within three days two of the assistants fell ill, and on the following day three more and the director himself. Unfortunately, two of the patients died and at the necropsy nodules of malleus were found in the bronchi and the lung parenchyma. The remainder got over the attack, but Dr. Luksch, the director, suffered from a recurrence after a fortnight, the eruptions occurring on the ear. He was brought for treatment to Vienna, every precaution against infection being taken. The railway car in which he travelled was disinfected at once and all those who had been in contact with him, all his household and family, as well as the railway men in attendance on him during the journey, were put in quarantine. The clinical symptoms of all these patients were those of lobular pneumonia; for a few days rumours had spread that the infection was in reality bubonic plague, not malleus, but fortunately these assertions were wrong. It must be added that the fatal experiments involved a transgression of the rules of the institute.

Post-graduate Classes during the Months of July, August, and September.

Between the end of June and the beginning of October a number of post-graduate classes will be held at the General Hospital in Vienna, comprising nearly all subjects of medical science. The instruction will be given by the clinical assistants and *privat-docenten*. Each class will last from four to six weeks, so that two courses will be held during the university vacation. A minimum number of ten applications is required to insure the classes. The fees are fairly uniform, £2 2*s.* for the theoretical and £4 4*s.* for the practical courses. Medicine, surgery, obstetrics, materia medica, ophthalmic and otological surgery, special pathology, metabolism, and pædiatrics are the subjects announced, and any other class may be had if there is enough demand for it. The advantages of these courses are manifold. The clinical material at the teachers' disposal is very large, as none is required for lectures by the professors during vacation, and the number of students is only small, so that each has an excellent opportunity of examining cases.

Difficult Removal of Bullet from the Brain.

Professor Schnitzler at a recent meeting of the Medical Society showed a girl, aged 17 years, who received a bullet in her brain 18 months previously. She had at first been unconscious and hemiparetic. These symptoms soon abated but headache of a very violent type, depending upon the posture of the head, made life such a burden to her that she asked to be relieved by an operation. X rays showed the presence of the projectile in the right temporal lobe. Its connexion with the headache was evident. Professor Schnitzler accordingly tried to remove the bullet, after locating it by radiography, by the aid of lead buttons fixed to the patient's head as landmarks. Nevertheless, during the operation no

bullet could be found. Accordingly, he inserted a silver wire into the wound, closed it up, and made new radiograms, which again gave positive hints as to the position of the bullet. The wound was re-opened six days later, but in spite of prolonged tedious search the foreign body was not discovered. Then an arc of silver wire was inserted in the direction of the old shot wound and the radiograms were repeated. This time the bullet was found to be encircled by the wire, and at the third operation eight days later the surgeon was able to remove it. The patient made an excellent recovery and shows no symptoms whatever of injury to the brain. The difficulties of finding foreign bodies in the brain are shown by the fact that 81 radiological methods have been recommended for that purpose. Operation is not often indicated, and von Bergmann has repudiated the idea of removing every foreign body from the brain. Some symptoms caused by destruction of brain-tissue cannot be improved by extraction of the bullet or other foreign body. Neither paralysis nor loss of memory can be thus influenced. Only violent headache, caused perhaps by pressure or the chemical action of the metal, calls for intervention. Very often repeated operations are necessary to get at the bullet, as the x rays are not entirely trustworthy in that respect. The case under discussion gave an exceptionally good functional result, perhaps owing to the youth of the patient.

Professor Heymans's Method of Prophylactic Vaccination against Bovine Tuberculosis.

At the invitation of the Vienna Gesellschaft der Aerzte Professor Heymans, from the University of Ghent, read a very interesting paper before that society on his original method of prophylactic vaccination of cattle against tuberculous diseases. He implants a small bag of vegetable matter (cellulose), which has been filled with a quantity of about 1-1000th gramme (1-60th grain) of living tubercle bacilli and then sealed with collodion, under the skin of the animal, preferably on the back. Within the first 48 hours an exudation occurs, consisting chiefly of polynuclear cells, around which a firm capsule develops, consisting of connective tissue. This is complete in from six to eight days after the implantation of the bag. This small vaccination nodule equals a tubercle, only the bacilli are quite shut off from the body of the animal. So long as they obtain sufficient nourishment by diffusion they thrive and on their part they supply the body with their specific products until the fluids diffusing into the bag exert a bactericidal effect or, in other words, until the organism has become immune. It is easy to prove that such a bag acts as a diffusion membrane for the specific substances produced by the bacilli which it contains, whilst it does not permit the egress of the bacilli themselves. If animals treated with implantation are killed four weeks after the operation the bag is found absolutely intact, the tissues even in its closest proximity are not infective for other animals, whilst during life a characteristic reaction can be obtained by tuberculin injection. This hypersensitiveness to tuberculin lasts about from six to eight months, so that if a healthy animal which has undergone "implantation" shows no reaction to tuberculin a year later it may be considered free from tuberculosis. Professor Heymans does not claim that his method insures absolute immunity against infection. He only asserts that for a certain period after the implantation of the bag the animals are less liable to infection than animals not treated in this way. The figures resulting from his researches are as follows: from 1905 to 1907 4000 cattle were treated by his method. Of these, 85 per cent. did not react to injection of tuberculin and they can thus be considered free from infection. 150 cattle, which had been healthy at the time of the implantation, were killed after one year to one and a half years; they had not reacted to tuberculin ten months after the inoculation. Only six of the whole number had any tuberculous disease, as was discovered by necropsy. 18 cattle were brought into an infected stable, of which half were immunised. Of the nine non-immunised animals six became tuberculous, whilst three did not. Of the immunised lot two only became infected. Professor Heymans accordingly concludes that animals vaccinated by means of the bag are rendered considerably more resistant against natural or artificial infection than those not treated in such a manner. In practice healthy animals are immunised as well as those which react to tuberculin. In the latter case the bag, permitting a small quantity of tuberculin substances to diffuse into the organism continually, has the effect of a series of curative tuberculin injections. So far as present experience goes vaccination once a year is sufficient to safeguard the herds. In six or eight months after operation the vaccine nodule becomes calcified and quite atrophic. The bacilli are disintegrated and dead, so that after about one year the whole nodule may be injected into an animal without infecting it.

July 9th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Frontier Campaign.

ALTHOUGH the expedition against the Mohmands and other frontier tribes has been brought to a successful conclusion, few details of medical interest have yet been made public. There are one or two matters connected with water- and food-supplies which deserve a record. Great attention was devoted throughout to the important question of water-supply. As previously noted in these columns, water in the Mohmand country in May is extremely scarce. It was found in one or two pools and feebly trickling streams in the Gondab nullah at Daud and at Ghalanai and in fast-flowing rivulets of from 10 to 15 feet width in the Ambahar near Kargha, and in the Dauish Kol at Mulla Killi. For the rest we had to rely for our water on village tanks and such springs as we could discover on the hill sides. Care had always to be taken that the drinking-water for the troops should not be contaminated by pathogenic bacteria, even though it might not always be particularly attractive in colour. On the arrival of the flying column at Nahakki, for example, on May 14th General Willcocks's first thought was for the pond. A guard was at once placed over the water and waterproof troughs were rigged up for mules and horses a short distance away. A platform at one end was set up for *bhisti's mussacks* to be filled by the aid of a bucket. A post for measuring the depth of water and showing the quantity daily consumed was fixed in the centre of the pond and force and suction pipes were employed for extracting the water for the troops. For some days the pond was the only source of water-supply. Later two springs were discovered in the near neighbourhood of Nahakki and these afforded to the garrison a plentiful supply of good drinking-water. The Kamalai *jirgah*, watching our proceedings with considerable interest, are said to have implored General Willcocks to complete the good work already begun by laying down piping all the way from the springs of Nahakki. The inhabitants of Nahakki could not do this for themselves as, said the *jirgah*, in matters of this kind there were sure to be faction fights from which more blood might be expected to flow than water. The suction pipes, it may be noted, were carried about by the advance guard on all occasions and utilised wherever the troops were to encamp. Cholera broke out on the line of communications at Daud and Ghalanai but nowhere at the front, and it says a good deal for the efficiency of the water arrangements that with all the difficulties that had to be overcome hardly a case of sickness occurred among the troops taking an active part in the operations. While on the subject of water another feature of the campaign deserves mention. This was the formation of a special water column which had a precedent, it is believed, in the Nile campaign, but has no precedent, so far as I am aware, in Indian frontier warfare on anything like the scale recently employed in the Mohmand country. The mobilisation of the Mohmand Field Force had no sooner been sanctioned than orders were issued for the immediate despatch to Peshawar from all parts of India of some 500 pairs of *pakhals* (metal tanks containing nine gallons of water). On the line of march the pakhals were carried by mules and camels (two to a mule and four to a camel). Where there was no water or where the water was insufficient or unfit for human consumption the pakhals were in great request.

Turning now to consider the subject of the food-supply, it may be said that the arrangements on the whole worked satisfactorily, though in the earlier stages of the campaign the seething mass of humanity demanding its daily rations from one much-harried individual suggested the reflection that it might have been more convenient to issue to the regiments in bulk and to allow them to do the retailing for themselves. The Sepoys

n any case were fairly well fed, better, perhaps, than they are in times of peace. It was otherwise, as far as could be gathered, with the British soldiers, amongst whom several complaints were heard. In a hot climate where dust storms are unpleasantly frequent "bully beef" or "bully mutton" in tins has the disadvantage that such of the meat as is not eaten when the tin is opened is likely to go bad. The 12 ounces of meat allowed per diem may sometimes, therefore, be actually represented by half that quantity. Where fresh meat is not available it is impossible, of course, to issue meat except in tins, and the waste, if a misfortune, is unavoidable. But at least compensation might be given to the men for what they lose in meat by the supply of such small luxuries as jam and lime-juice. Jam, as everyone knows, has considerable sustaining powers and is a pleasant addition to bread that has been dried and hardened by the sun into a substance closely akin to Mohmand rock. The strictest orders had been issued about cutting down transport to its lowest limits, and a coffee shop on the march was consequently out of the question. At the advanced base, Nahakki, however, a coffee shop could have been permitted without grave interference with transport arrangements, and a coffee shop there, it is certain, would have done a roaring trade. A punitive force over the border cannot, of course, afford to be overburdened with transport, but considering the extent of the operations, the time of year, and the country to be visited, the scale of baggage allowance might have been more liberal. Ten pounds for the private soldier does not admit, for example, of the carrying of an extra pair of boots and the disadvantage of too low a scale in this respect alone was glaringly shown at Nahakki on May 21st, when the Seaforths, owing to their boots needing considerable patching, were unable to join the First Brigade on its march north, their place being taken by the 55th Coke's Rifles. A scale that was suited for a week-end war in cool weather is not necessarily adequate for a month's campaign in the summer and in a country where there is no shade. Tents for the men in the latter case are more a necessity than a luxury. The troops stood the test splendidly but one cannot help feeling that their comforts were sacrificed somewhat unnecessarily for the shibboleth of mobility.

The field force started demobilising on June 1st and up to date most of the medical *personnel* belonging to other parts of India have been returned to their original duties.

The medical arrangements of the Mohmand field force, on the whole, worked very satisfactorily. The new divisional system of medical mobilisation introduced last year on the abolition of the old commands has had its first trial and has proved sound. The entire medical and sanitary *personnel* of the 1st Peshawar, 2nd Rawalpindi, and 3rd Lahore divisions were mobilised and a large number of medical officers and subordinates were drawn on from the 7th Meerut and 8th Lucknow divisions. The only weak spot in all the medical mobilisation arrangements was the question of transport. Since the wholesale reduction of the Army Bearer Corps in 1907 to 1200 men for all India there are not sufficient men now left serving in any divisional area to meet a quarter of the requirements of any division of troops; accordingly, when three divisions came to be mobilised the military medical authorities had to beg, borrow, and procure as they could Kahar dhooly bearers from adjacent divisions. Colonel H. R. Whitehead, C.B., R.A.M.C., was principal medical officer of the field force and had a particularly busy time as he accompanied General Willcocks throughout. All arrangements at the base general hospitals were under the able direction of Lieutenant-Colonel F. P. Nichols, R.A.M.C., who also acted as principal medical officer of the Peshawar divisional area with its skeleton garrisons and senior medical officer of Peshawar, and all medical arrangements for the lines of communication were under Lieutenant-Colonel F. H. Treherne, R.A.M.C., who was moved up from Ambala to take charge. An officers' hospital was formed at the base of operations (Peshawar) and did good work. It had a complete staff of military nursing sisters and male nurses, the former belonging to Queen Alexandra's Military Nursing Service for India. The wounded all did particularly well and the only difficulty lay in coping with the very alarming outbreaks of cholera, which, though small, were particularly malignant, 35 deaths occurring out of some 45 cases amongst European troops. The disease was supposed to have been contracted in the first instance by the Royal Munster Fusiliers from bazaar soda-water supplies.

The Factory Commission.

The Indian Factory Labour Commission has finished taking evidence and terminated its tour. The members are now preparing its report at Simla. The problem of hours is naturally the most important matter under consideration of the Commission and very contrary opinions for and against the proposed restricted hours were given by the various witnesses examined. It was indirectly the long hours worked by the Bombay mills in 1905 that gave rise to the appointment of this Commission to inquire into the conditions of factory labour. Before the Commission began to take evidence, however, the Bombay cotton mills had adopted the 13-hour or daylight day. The new working day of 13 hours in Bombay was surpassed by Agra with its day of from sunrise to 9 P.M., and by the 15-hour day of the Calcutta jute-weavers and by the 16-hour day of the women in the gins. Delhi and the Punjab generally have a 14½-hour day of labour. The law at present in regard to women and children does not seem to be enforced as rigidly as it should be. In Bombay it is stated to be enforced strictly; the employers give the weekly holiday, all irregularities are checked so far as possible, and inspection is in fact and not merely in name. It seems impossible to say this in respect of any other province. Inspection had become exceedingly slack in the United Provinces and Bengal so far as the employment of children was concerned, which allowed the present deplorable situation to arise in the Calcutta jute industry. In Burma the Act was enforced in a friendly sort of way and in Madras the usual suspicion arose about the employment of children. Up through Berar and the Central Provinces the evidence seemed to show that the conditions governing the employment of females in gins required modifying, while in the Punjab the local Government has only just awakened to the fact that a Factory Act exists. It seems probable that the report under consideration will be the forerunner of an entirely new and more stringent Factory Act.

Most witnesses favoured the appointment of special inspectors for the big mill areas or provinces, together with a certain amount of *ex-officio* inspection. It is not unlikely that the latter will have to continue in the more isolated districts. Inspectors, however, will probably have the guidance of clearer rules and regulations and steps will no doubt be taken to insure a uniform interpretation of the Act throughout India and Burma. In this respect it is interesting to notice that several gentlemen advocated the appointment of a general inspecting officer who would keep the reins of factory inspection in his own hands and so insure continuity of policy. One need say little concerning women and children, for under the present Act there is no reason for supposing that they are inadequately safeguarded, and why these provisions should have been disregarded local governments must determine for themselves. At present females are allowed to work for 11 hours and during their working day they must have one and a half hours' rest. Female labour is chiefly employed in mill-reeling and in the gins. It is difficult, however, to fit their hours in with the smooth running of a mill, and so female labour is not employed so largely as one would have expected. In the gins the custom generally is to employ a percentage of extra women and allow them to arrange their hours amongst themselves. Where there are no fixed and definite sets one is always free to argue that the women work beyond their legal period. One proposal is to allow women to work for 12 hours and put them with the class of "young persons" should the latter be created. This would help the supply of labour in certain districts. Concerning ginning very few object to all gins being brought under the Act, but the large majority of witnesses impressed on the Commission the fact that the industry would be very much injured if women were not allowed to work at night. When questioned on the subject of children the general opinion was that a case had not been made out for an increase in the minimum age and that if the existing Act was only enforced children would be amply protected. One may not unreasonably assume that half-timers will continue to be those children between the ages of nine and 14 years but employers of labour may expect to see more stringent

provisions for the due observance of the Act. For instance, it is probable that a register of attendance will be compulsory for all protected workers, and the sets will have to be clear and distinct, giving the names of the workers and the times at which they are supposed to be at work. There is a proposal that all children found on the premises by an inspector shall be presumed to be at work, but whether all young non-working children, including children in arms, will be prohibited remains to be seen. On this point many witnesses urged that the women would not come to work if they could not bring their babies or young children and then the supply of labour will be affected. At present the examination of the child is for age only and there is a general approval of the suggestion that this examination should include physical fitness, while before merging into the adult stage the child should be examined a second time for physical fitness. To facilitate the work of inspection it is desirable that all children should be certified for age and fitness before commencing work, and owners offered no objection to this providing reasonable opportunities were given for the examination of the children so that mill work would not be inconvenienced. The idea of making the millowner become an educationist and philanthropist has somewhat lost ground, for without compulsory education on the part of the State one can hardly expect millowners to display a keen desire for educational reform at their own expense. Too often, also, does it appear that the school within the precincts of the mill compound is a blind to enable the jobbers to keep up their supply of children.

The Bombay millowners are asking Government to help them in the provision of chawls, and the Commission could assist, if the members so desire, by making a favourable recommendation on the subject. It is undisputed that the operatives do appreciate the provision of sanitary housing accommodation, and witnesses in Bombay, Cawnpore, Calcutta, Agra, Rangoon, and all over India have been enthusiastic in praise of the chawls. Not only do these dwellings help to keep the supply of labour more stable but in a city like Bombay they would become an important factor in the solution of the housing problem. Ventilation and sanitation are two further matters with which the Act will deal, but employers of labour may take it for granted that all recommendations on these heads will be of a reasonable character. Last but not least comes the hours question and the arguments for and against the restricted day are well known in Bombay. It is a big question, involving physical deterioration, loitering, lack of skill, the frequent holidays which the men take, inattention to work, and other points, all of which have been expounded before the Commission. Physical deterioration has never been searched for. All one knows is that the men frequently change about and take long holidays, while if they become ill the probability is that they go to their own country. Medical evidence is, however, almost unanimous that a man should not work more than 12 hours in this climate. Those who want an unrestricted day urge the growing competition of Japan in the Chinese markets and dislike the idea of Indian industries being bound hand and foot by a fixed legislative day. On the other hand, the Indian workman is capable of improvement, as the short hour mills in Bombay, Cawnpore, and Madras demonstrate. In these mills with the 11-hour and 12-hour days the production has increased to the old long-hour level, the men have improved in skill, and their wages have not decreased. The alternative to the legislative day is the "young persons" class, consisting of those immature adults between the ages of 14 and 16 or 17 years whose hours, limited to 12 per day, will, it is contended, determine the running hours of a mill. In some quarters this class is not favoured on the ground that it complicates the management of the mill, while one witness gave expression to the opinion of others when he said that he felt that some owners would try to "get round it." In all mills extra hands are employed to cover absentees and one witness put forward the theory that in order to work a thirteenth hour he had merely to treat the "young persons" as the absentees for that hour and insist on the presence of his adult workers. The fact seems incontrovertible that with efficient management and supervision a shorter day is more economical than the longer day and what can be accomplished at Cawnpore and Madras can be done elsewhere.

June 20th.

Obituary.

HENRY ASHBY, M.D. LOND., F.R.C.P. LOND., M.R.C.S. ENG.,

PHYSICIAN TO THE MANCHESTER HOSPITAL FOR CHILDREN, ETC.

THE death of Dr. Ashby, which took place on July 6th, has left the profession in Manchester distinctly poorer, and the city itself has lost one of its most valuable citizens, for by his wise counsel, more especially in regard to children, the public health has benefited and will continue to benefit to a degree which it is difficult to estimate. As a student his career at Guy's Hospital was brilliant. In 1873 he gained a gold medal for clinical medicine and while at the hospital he held the posts of resident obstetric physician, house physician, and assistant in the physiological laboratory. In the same year he became a Member of the Royal College of Surgeons of England and in the following year he passed the M.B. examination of the University of London and took the M.D. degree in 1878, gaining the distinction of gold medallist. Remaining at Guy's Hospital till 1875, he then left London, as he was appointed to the demonstratorship of anatomy in the Liverpool School of Medicine, a post which he held till 1879. While in Liverpool he became assistant physician to the Infirmary for Children, an appointment which he held till his removal to Manchester, which took place about this time. He now took the important appointment of physician to the Manchester Hospital for Children, more frequently spoken of as the Pendlebury Hospital. From the time of his connexion with the Liverpool Hospital for Children to the close of his too brief career his life was given to the welfare of children. For nearly 30 years he was not only a physician but a member of the board of management at Pendlebury, where his loss will be deeply felt. As one of the Manchester papers says, "The subject of supreme interest to Dr. Ashby was the child in all its aspects—medical, hygienic, and psychological." Notwithstanding this he took his full part in the medical life and the medical societies of the city. From 1879 to 1882 he was secretary to the Microscopical Section of the Medical Society. From 1880 to 1882 he was evening lecturer on animal physiology in the Owens College. From 1880 to 1908 he was lecturer on diseases of children, first in the Owens College and afterwards in the University of Manchester; examiner in children's diseases in the Victoria University (before its division) from 1884 to 1904; and was a member, and in due course president, of the various medical societies of Manchester. In 1890 he became a Fellow of the Royal College of Physicians of London. His direct and indirect associations with efforts for the benefit of children were numerous; besides being one of the physicians to the hospital at Pendlebury, with its 168 beds and its convalescent home at St. Ann's-on-the-Sea, he was honorary consulting physician to the school for the deaf and dumb, Old Trafford, and the Sandlebridge schools for feeble-minded children, and furnished valuable reports to the Manchester Education Committee on the care and education of feeble-minded children. He was throughout one of the governors of the Sandlebridge school, in the success of which he always took great delight and satisfaction. Frequently, also, he would give homely and practical lectures to such audiences as those at the meetings of the Ancoats Healthy Homes Society, where many of the poorest mothers in the town are to be met with. His addresses on such occasions were simple and full of the common-sense which was one of his characteristics, while the illustrations used would make all plain to his audiences. At one of them he spoke earnestly for rational clothing for children, instead of the thin, tight-fitting clothes, often dyed with injurious substances, often seen, and showed the audience samples of those which he condemned, at the same time urging on the mothers and elder girls to learn how to make warm and loose-fitting clothing for the little ones. On another occasion he showed a feeding-bottle which he described as the "kill-me-quick bottle," and told them of the need of cleanliness and the proper care of milk, recommending a corked bottle rather than a pie-dish for keeping it in. He used to say that babies wanted fresh air, but to walk them about the streets at 11 o'clock at night was hardly the best way of providing it, and he endorsed the suggestion

of the late Mr. Sidney Smelt that to avoid the frequent tragedy of overlying children by feckless or sometimes drunken mothers an empty orange box should be converted into a cradle. This may seem a poor substitute for one, but it must be remembered that in some parts of Manchester many of the people are, from one cause or another, very, very poor. It was inevitable that he should take an interest in the purity of the milk-supply. Some corporations have opened milk depôts with no doubt a certain amount of benefit, but Dr. Ashby was inclined to think that it was better for a corporation to act as a censor, inspecting milkmen and their supplies rather than entering the ranks of tradesmen. He approved, however, of municipal crèches for motherless children and for those whose mothers had to go out to work, but he made this important suggestion that they should be schools, so to speak, for teaching the mothers living in the district. He believed, too, in the feeding of school children, with the qualification, however, that the parents should pay the "necessary penny" for a meal. To relieve them of this liability he thought would be a great mistake, for the sense of parental responsibility (already much lessened) must be kept alive and quickened.

In 1904 he was a witness before the Interdepartmental Committee on Physical Deterioration. With regard to the milk-supply, he spoke of a large proportion coming from a distance: the evening's milking comes during the night and is sold in Manchester next morning, so that a good deal of it is stale when delivered; he also spoke of the careless handling on the farms and in transit and also in the household. The wonder indeed is, that the harm done by the damaged milk, though undoubtedly great, is not more evident than it seems to be. In his evidence he gave the Manchester corporation credit for obtaining powers to secure a good milk-supply and for applying those powers. The farmers, many of them, felt the regulations somewhat of a hardship, but a better and more intelligent spirit is now at work and they are beginning to see that the purity of the milk was a matter of more importance both to themselves and to the public health than had previously occurred to them. With regard to the principal causes of "the weakness of children at the present day," he said he believed that they were "heredity, unintelligent mothering, and the effects of improper feeding." As to the second of these he mentioned "want of cleanliness, badly fitting and insufficient clothing, bad ventilation in the home, and exposure to cold in the streets, often late at night." But as a relief to this picture of the unfitness of a large proportion of the mothers to bring up a healthy family he said that as the result of his 25 years' observation he thought that the parents had improved and he did not think that the children in Manchester were now deteriorating. Then with regard to education, he had a strong opinion of the importance of instruction in hygiene and mentioned the employment in Manchester of a nurse who went from school to school teaching the eldest girls home duties and the care of children. His evidence was considered of great value and, as one of the committee remarked, as having been given by one who had been "for a great many years physician of one of the finest children's hospitals in Europe." In 1900 the Manchester school board undertook the education of the feeble-minded children and naturally asked Dr. Ashby for advice and assistance. An inquiry was made in all the board schools and a large number were examined by Dr. Ashby. It would not be right here to avoid the mention of the great help given by Miss Dendy who was one of the first to draw attention to these children and to show the need for special schools if the best was to be made of what mental power they possessed. As the result of this inquiry two special day schools were established, one in Chorlton-on-Medlock and one in Newton Heath, while two others in suitable localities are nearly completed. Dr. Ashby continued the work of medical examiner to these schools, and also for epileptic children, when the new education committee in 1905 arranged with the committee of the David Lewis Epileptic Colony to receive Manchester children under a joint scheme of management. It must be acknowledged that the Manchester city council has devoted much attention to those who are heavily handicapped by epilepsy or mental deficiency, but in addition to these there are others suffering from spinal or hip diseases and paralysis. The education committee took the matter in hand, negotiated with the Children's Hospital authorities, and a residential school in ample private grounds was established in Swinton Park. It accommodates 65 children and its success is in great part due to Dr. Ashby's watchful care. The work briefly and imperfectly sketched here would have been sufficient to occupy the energies of most men, but he found time for a considerable amount of writing. His "Notes on Physiology" have gone through many editions, while the "Diseases of Children, Medical and Surgical," written in conjunction with Professor G. A. Wright, one of his colleagues at the Children's Hospital, has, we may fairly say, become a classic. Other publications, both books and articles, all bear the marks of the strong sense and directness of purpose characteristic of the writer.

There is scarcely space to speak of the charm and interest which his direct and earnest manner, coupled with a sympathy not perhaps immediately apparent to strangers, produced, but the very large attendance at the crematorium in Burlow Moor-lane from far and near, not only of medical men and University professors but of representatives of almost all the philanthropic societies in any way connected with medicine, testified to the great respect and regard in which Dr. Ashby was held. This is further shown by the following resolution:—

> The Governors of the Manchester Children's Hospital have received with great sorrow the news of the death of Dr. Henry Ashby, who for 29 years was honorary physician to, and a member of the Board of Governors of, this hospital, and by his great professional skill and personal care and interest rendered invaluable service. They desire to express their profound sense of the loss sustained by the community in the death of a man who was so unsparingly devoted to the public good, and who so unselfishly and with such exceptional skill and experience brought the resources of his great profession to the relief of suffering and the improvement of the conditions of life among poor children. They feel it is a privilege to have been associated with him in part of his great work, and they respectfully offer to Mrs. Ashby and her family a deep sympathy in their heavy trial.

Dr. Ashby has left a widow and two sons.

His remains were cremated at the Manchester Crematorium on July 8th, and the urn was afterwards privately interred in the family grave at St. James's Church, Birch-in-Rusholme.

PROFESSOR OSCAR LIEBREICH, M.D., LL.D. ABERD. AND OXON.

Professor Oscar Liebreich died in Berlin on July 2nd at the age of 69 years. His name will be remembered by medical men and pharmacologists chiefly for his introduction in 1872 of chloral hydrate into therapeutics. Liebig discovered this interesting organic salt, but its physiological properties were seriously studied by Liebreich, who also pointed out that it was readily decomposed by alkalies into chloroform and formic acid. Later Liebreich introduced croton chloral hydrate as an anodyne in neuralgia. His researches on wool fat resulted in the preparation of lanolin which has proved an excellent fatty basis for ointments. Later he isolated protagon from cerebral substance and announced the formation of formamide of mercury and of ethylene chloride. Liebreich held several important appointments, the earliest of which was that of assistant to the department of the Pathological Institute in Berlin, an appointment which he owed to Virchow. Later he became the director of the Pharmacological Institute in that city, which post he resigned owing to ill-health some six months before he died. He contributed a number of important papers of pharmacological interest.

WILLIAM JOHN BROCK, M.B., D.Sc. EDIN., F.F.P.S. GLASG., F.R.S. EDIN.

Dr. William J. Brock, who held the important post of medical officer of health of the combined counties of Midlothian, West Lothian, and Peebles, died unexpectedly at his residence in Edinburgh on July 6th. Dr. Brock graduated in medicine at the University of Edinburgh in 1874. He practised in Glasgow for a number of years and held some public appointments in that city. He then went to South Africa where he spent some years, but returned to Scotland and began to study for a science degree in public health given by the University and succeeded in taking the B.Sc. in 1888. In 1890 he obtained his D.Sc., having presented a voluminous thesis on Vital Statistics. After holding various minor appointments he was selected for the medical officership of his native county of Caithness. He had not held that

post long when he was fortunate to secure the premier county post in Scotland, and this he held at the time of his death. He contributed several papers to the medical journals in the earlier years of his professional career, but his most important work was his book on "Scottish Sanitary Laws and Principles of Public Health" which was published by Messrs. Oliver and Boyd in 1905. Dr. Brock was keenly interested in his own department and did not spare himself in the discharge of his duties. He was a man with a large circle of friends, for any of whom he was always ready to do anything in his power. Of late years his health had been indifferent and from time to time he was unequal to the physical strain of seeing to the sanitation of three counties and several burghs. He was buried in the Dean Cemetery on July 9th, the funeral being attended by a number of his medical friends and others. He was married in 1903 and has left a widow and two daughters to mourn their loss.

SIR THOMAS NAGHTEN FITZGERALD, C.B., F.R.C.S. IREL.

BY the death of Sir Thomas N. FitzGerald Australia has lost a most distinguished surgeon who enjoyed a high reputation for his professional attainments and operative skill and the medical profession generally one who will ever be regarded as a staunch and loyal member. Sir Thomas FitzGerald, who was a son of Mr. Thomas FitzGerald, a member of the Indian Civil Service, was born in 1838 and, we believe, received his medical education with the intention of becoming a surgeon in the medical department of the army, for if we mistake not he was a successful competitor for a commission in the Army Medical Service but had to leave Netley owing to an acute attack of illness, to recover from the effects of which he went to Australia where he subsequently had a large and lucrative practice at Melbourne. In 1857 he obtained the Licentiateship of the Royal College of Surgeons in Ireland and in 1884 received the Fellowship. He was created a Knight in 1897. During the period of the late South African war he temporarily relinquished his practice in order to proceed to Natal as consulting surgeon to the Imperial Royal Army Medical Corps. He was mentioned in dispatches and for his services received the Companionship of the Bath in 1900. In December of the same year he wrote an interesting account of his experiences in South Africa for the *Intercolonial Medical Journal of Australasia* in which the work done by the Royal Army Medical Corps and the nursing service was fully appreciated. In the year 1880 he was president of the Intercolonial Medical Congress of Australasia and was twice president of the Medical Society of Victoria—namely, in 1884 and 1890. He was also consulting surgeon to the Melbourne Hospital, the St. Vincent Hospital, Melbourne, and Queen Victoria Hospital, Melbourne. His contributions to surgical literature included papers on Cleft Palate, Fractured Patella, Club Foot, Drilling in Bone Formations, and other surgical matters in which he was specially interested. In 1870 he married the daughter of Mr. James Robertson, of Launceston, Tasmania, who died some seven years ago.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Enoch V. Stoddard, formerly professor of materia medica and therapeutics in the University of Buffalo. Dr. Deneffe, formerly professor of operative medicine in the University of Ghent. Dr. Moreau, professor of hygiene in the Algiers Medical School.

COAL SMOKE ABATEMENT.—The annual general meeting of the Coal Smoke Abatement Society was held at the Royal United Service Institution, Whitehall, S.W., on July 3rd, under the presidency of Sir William Richmond, K.C.B., R.A. Sir William Richmond congratulated the society on the continued progress that was being made but he pointed out the difficulty of successfully prosecuting those who allowed black smoke to emanate from chimneys owing to the different way in which magistrates interpreted the word "black." Dr. H. A. Des Vœux seconded the report which was adopted. This excellent society does not receive the support from the medical profession which it merits. It has done, and is doing, an admirable work.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology held on July 2nd, 3rd, 6th, 7th, and 8th 115 candidates presented themselves, of whom 77 were approved and 38 were rejected. The following are the names of the successful candidates:—

David Greig Arthur, St. Bartholomew's Hospital; Francis Balkwill, Manchester University; Harold James Beresford-Heelas, Middlesex Hospital; Isaac Barnett Bernstein, Leeds University; Phiroz Byramji Bharucha, L.M. & S. Bombay, Bombay University; Edward Billing, B.A. Cantab., Cambridge University and Guy's Hospital; Henry George Barham Blackman, Guy's Hospital; John William Bowen, King's College; Thomas Creswell Brentnall and Joseph Henderson Bulcock, Manchester University; Frank Bocquet Bull, Lionel Charles William Cane, and Norman Stuart Carruthers, Guy's Hospital; Keshiv Sadashiv Chasker, Bombay University and King's College; William Hern Cornelius, Middlesex Hospital; Kaye Farquhar Rashell Davison, King's College and Westminster Hospitals; Henry Harvard Davis, Guy's Hospital; Sidney Alfred Day, St. Mary's Hospital; James Anthony Delmege, Guy's Hospital; Gordon Ernest Dormer Ellis, St. Bartholomew's Hospital; George James Frank Elphick and Cyril Douglas Faulkner, St. Mary's Hospital; Percy Leslie Foote, Otago and London Hospital; Arthur Friedlander, Otago and Middlesex Hospital; Andrew Alexander Fyffe, Sheffield University; Alfred Linton Gardner, Guy's Hospital; Aubrey Scott Gillett, King's College; Vinayak Balvant Gokhale, L.M. & S. Bombay, Bombay University and King's College; Frank Cyril Greig, Otago University and University College Hospital; Bernard Grellier, Charing Cross Hospital; David Henry Griffiths, University College, Cardiff; Edward Wilson Hall, Middlesex Hospital; John Cecil Hallinan, Charing Cross Hospital; Arthur Stanley Heale, London Hospital; Rainald Heaton, B.A. Cantab., Cambridge University and Guy's Hospital; Harold Howard Hiley, University College, Bristol; Ivor Robert Hudleston, University College, Bristol; David Edward John Stopford Hughes, St. Bartholomew's Hospital; Aneurin Ernest Jenkins, St. Bartholomew's Hospital and University College, Cardiff; Clifford Yule Laing, Manchester University; William Balfour Laird, St. Thomas's Hospital; John Vollans Lambert, Middlesex Hospital; Mark Lindsey, St. Bartholomew's Hospital; Frederick Martin Lipscomb, King's College; George Carter Lowe, Guy's Hospital; Samuel Marie, University College, Bristol; Godfrey Kindersley Maurice, St. Mary's Hospital; Malcolm Milton Melrose, Manchester University; Damodhar Narayenswami Mudliar, Grant Medical College, Bombay; George Nelson, Charing Cross Hospital; John Herbert Owens, London Hospital; Alfred Spearman Pern, St. Thomas's Hospital; Allan Pimm, University College Hospital; Vivian St. Leger Pinnock, University College, Bristol; Reginald Arthur Pittard, University College, Cardiff; Ernest George Thornton Poynder, Middlesex Hospital; George Lionel Preston, Guy's Hospital; Stanley Alfred Riddett, Middlesex Hospital; Lawrence Lancaster Sabow, St. Bartholomew's Hospital; Charles Frank Schuler, St. Thomas's Hospital; Thomas Stoney Sharpley, Guy's Hospital; Ivan Norman Spedding, Otago University and Middlesex Hospital; Cecil Hearle Symons, Charing Cross Hospital; Daniel Owen Twining, University College Hospital; Bernard Thomas Verver and Walter Palmer Vicary, Guy's Hospital; Lawrence Cecil Walker, B.A. Cantab., Cambridge University and St. Mary's Hospital; Maximilian Christian Wall, Guy's Hospital; Sidney Harland Ward, Otago University and London Hospital; Thomas Sykes Ward, Sheffield University; Frank Wells, St. Mary's Hospital; Hugh Wetherbee and John Helby Wilkinson, London Hospital; Owen Elias Williams, Guy's Hospital; James Ernest Studholme Wilson, London Hospital; Percy Arthur With, St. Bartholomew's Hospital; and John Eric Wood, London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the quarterly meeting of the Council of the above College on July 9th the following diplomas were conferred upon the undermentioned gentlemen who have now complied with the respective by-laws:—

Diploma of Fellow.—Charles Harold Smith (Liverpool University).
Diploma of M.R.C.S.—Clifford Beards (Oxford University and Charing Cross Hospital).
Licence in Dental Surgery.—Edgar Eaton Solomon (Guy's Hospital).

UNIVERSITY OF OXFORD.—The following candidates have been approved at the examinations indicated:—

PRELIMINARY EXAMINATION.

Mechanics and Physics.—W. T. T. Ainsworth, non-collegiate; H. D. Barnes, Magdalen; J. D. Batt, Trinity; R. C. Bourne, New College; E. W. Carrington, Keble; M. W. Clifford, Lincoln; J. C. Davies, New College; C. Dean, Trinity; E. M. Dyott, non-collegiate; E. T. Edge, New College; F. H. Gee, non-collegiate; O. J. Hobbs, Merton; E. W. N. Hobhouse, New College; W. O. H. Joynson, Christ Church; Hon. E. C. Percy, New College; E. Scott, St. John's; G. St. J. Strutt, Magdalen; and B. Tunstall-Behrens, Pembroke.
Physics.—A. A. M. Davies and D. B. J. Hallett, University; R. H. Lucas, Christ Church; G. A. Maling, Exeter; A. L. Pearce-Gould, Christ Church; G. S. Robinson, Exeter; and B. E. Wall, Lincoln.
Chemistry.—W. T. T. Ainsworth, non-collegiate; S. P. Austin, St. John's; R. G. Barnes, Christ Church; J. H. Beattie, Corpus Christi; B. Blackman, Queen's; M. W. Clifford, Lincoln; W. S. Coad, St. Edward's Hall; R. T. Edge, New College; J. G. Fry,

Exeter; R. St. A. Heathcote, New College; C. J. Hirst, Exeter; S. Holliday and W. Hunter, non-collegiate; W. O. H. Joynson, Christ Church; A. H. Miller, Merton; G. St. J. Strutt, Magdalen; R. J. Thomas, Jesus; W. W. Waller, New College; and J. W. Woodrow, Queen's.

Zoology.—R. Benskin, St. John's; G. Cranstoun, Oriel; S. D. Gurney, Wadham; W. Lawton, St. John's; C. G. Roach, Exeter; J. W. G. Steell, Trinity; F. M. Trefusis, Exeter; B. E. Wall, Lincoln; D'Arcy W. Ward, Trinity; and J. F. West, Christ Church.

Botany.—R. G. Barnes, Christ Church; C. M. Burrell, University; E. W. Carrington, Keble; R. C. Fairbairn, Exeter; R. A. D. Gillis, St. John's; S. D. Gurney, Wadham; R. St. A. Heathcote, New College; H. S. Knowlton, Keble; E. E. Mather, Exeter; M. O. Raven, Trinity; E. Scott, St. John's; F. J. Tear, non-collegiate; T. O. Thompson, St. John's; F. M. Trefusis, Exeter; and W. W. Waller, New College.

FINAL HONOUR SCHOOLS EXAMINATION.

Physiology.—Class I.: H. C. Bazett, Wadham; J. L. Birley, University; W. Burridge, Christ Church; N. G. Chavasse, Trinity; H. W. Scott-Wilson, Queen's; A. F. S. Sladden, Jesus; W. W. Wagstaffe, New College; and W. E. Waller, University. Class II.: A. R. Chavasse, Hertford; G. C. Dixon, Balliol; G. E. Downs, Magdalen; W. J. Oliver, Oriel; A. S. Roe, Balliol; C. J. G. Taylor, University; and R. C. Wingfield, Trinity. Class III.: S. E. Beech, Queen's; C. H. Budd, Oriel; P. G. Doyne, Trinity; D. P. McDonald, Oriel; F. H. Mosse, Trinity; and E. H. Udall, Queen's. Class IV.: M. R. Lawrence, St. John's; and H. G. Morris, University. Overstanding for honours, but satisfied the examiners: H. M. Pope and G. Stanger, Lincoln.

FIRST M.B. EXAMINATION.

Organic Chemistry.—C. W. Armstrong, Jesus; R. F. B. Bowes, B.A., Queen's; C. M. Burrell, University; D. B. T. Hallett, University; W. H. Ogilvie, New College; G. B. Tarring, Merton; and B. H. Walker, Queen's.

Materia Medica.—G. E. Beaumont and A. A. M. Davies, University; F. A. Hampton, New College; G. T. Hebert, Christ Church; A. Juett, Brasenose; N. S. Lucas, B.A., New College; C. Newcomb, B.A., St. John's; W. H. Ogilvie, New College; A. H. Southam, Christ Church; T. A. Townsend, New College; J. F. Venables, Magdalen; C. W. Wheeler-Bennett, Christ Church; and S. B White, Keble.

Anatomy and Physiology.—P. P. W. Andrews, B.A., University; C. F. Beevor, B.A., Magdalen; A. D. Gardner, B.A., University; P. L. Gibson, Trinity; T. B. Heaton, Christ Church; G. W. Johnson, B.A., Brasenose; J. R. Kay-Mouat, M.A., and R. C. Ozanne, Hertford; R. L. Pearce-Gould, B.A., Christ Church; G. H. Varley, B.A., St. John's; R. O. Ward, B.A., Queen's; and J. A. Wood, University.

SECOND M.B. EXAMINATION.

Pathology.—P. N. Cave, B.A., University; G. H. Cross, B.A., Balliol; H. E. Gibson, B.A., Queen's; C. Gouldesbrough, M.A., and G. H. Hunt, B.A., Christ Church; E. A. Ramsden, B.A., and A. H. Savage, B.A., New College; G. E. Thornton, B.A., Oriel; and T. S. Wright, M.A., Brasenose.

Forensic Medicine and Public Health.—M. Davidson, M.A., Trinity; H. E. Gibson, B.A., Queen's; G. R. Girdlestone, B.A., New College; and H. M. C. Green, B.A., Wadham.

Medicine, Surgery, and Midwifery.—G. H. H. Almond, B.A., Hertford; M. Bates, B.A., St. John's; C. D. Corbett, B.A., University; M. W. Flack, B.A., Keble; G. R. Girdlestone, B.A., New College; J. E. Rutherford, B.A., Corpus Christi; and A. P. Yonge, B.A., Exeter.

UNIVERSITY OF BIRMINGHAM: FACULTY OF MEDICINE.

The following is a list of the successful candidates at examinations held in June:—

I. Degree of Doctor of Medicine.—Robert Arthur Lyster, Norman John Lancelot Rollason, and Helen Gertrude Stewart.

II. Degrees of Bachelor of Medicine and Bachelor of Surgery.—Charlotte Bailey, John Dale, Eric Thomas Gaunt, Edward Vernon Whitby, and Norman Valentine Williams.

III. Fourth Examination for the degrees of M.B., Ch.B. (Forensic Medicine, Toxicology, and Public Health).—Class I.: Mary Clarke and *Humphrey Francis Humphreys. Class II.: Walter Charles Blackham, Norman Alexander Boswell, Harold Gordon Browning, John Selwyn Edwards, Violet Maud McCready, Carl Euclid Molino, Herbert Henry Sampson, Charles Joseph Thompson, Ethel Annie Waldron, Harold Arthur Whitcombe, and Kenneth Douglas Wilkinson.

IV. Third Examination for the degrees of M.B., Ch.B. (Pathology and Bacteriology, Materia Medica and Pharmacy).—Class I.: *Cranston Walker. Class II.: Eric Walter Assinder, George Frederick Jotham (Materia Medica and Pharmacy), Arthur Harry Newton (Pathology and Bacteriology), and Charles Joseph Thompson.

V. Second Examination for the degrees of M.B., Ch.B. (Anatomy and Physiology).—Class I.: *George Ernest Elkington and *Alan Ayscough Wilkinson. Class II.: Robert Baxendell Coleman, Evan Davies, Percy Alfred Newton, Charles Ernest Salt, and Arthur Christopher Tibbits.

VI. First Examination for the degrees of M.B., Ch.B. (Chemistry, Physics, and Biology).—Class II.: George Herbert Alabaster (Biology), Norman Arthur Austin (Chemistry, Physics, and Biology), Ralph Alexander Broderick (Chemistry, Physics, and Biology), Eric Francis Buckler (Biology), Elsie Mary Humpherson (Physics), John Christopher Jones (Chemistry, Physics, and Biology), John Burman Lowe (Chemistry, Physics, and Biology), Horace Clarence Nichson (Chemistry, Physics, and Biology), Percival Thomas Priestley (Chemistry and Biology), James Avit Scott (Chemistry, Physics, and Biology), Herbert Sheasby (Chemistry, Physics, and Biology), and Charles Lovell Spackman (Chemistry and Biology).

VII. Degree of Bachelor of Dental Surgery (Official).—William Thompson Madin.

VIII. First Examination for the Diploma in Dental Surgery (Chemistry and Physics).—John Jessop and Edgar George Jones.

IX. Diploma in Public Health.—Parts I. and II.: Robert Burnet, Walter Donald Carruthers, and Morris Wilks. Part I. only: Harold Salter Gettings. Part II. only: Alfred Ernest Remmett Weaver.

* Queen's Scholarship.

SOCIETY OF APOTHECARIES OF LONDON.

At the Primary Examination held recently the following candidates passed in the subjects indicated:—

PART I.

Biology.—W. M. Evans, University College; and C. G. G. Winter, St. Mary's Hospital.

Chemistry.—W. Andrew, King's College; H. H. Fairfax, Charing Cross Hospital; L. F. Fain, Birkbeck College; and R. H. Pettersson, Birkbeck College.

Materia Medica and Pharmacy.—W. S. Hughes, Charing Cross Hospital; D. M. Hunt, London Hospital; and F. G. Norbury, Liverpool.

PART II.

Anatomy.—I. M. Bernard, Royal Free Hospital; E. G. P. Faulkner, St. Mary's Hospital; H. A. Hancock, Cambridge; F. I. G. Hunter, C. A. Mortlock-Brown, and D. L. Schwabe, Royal Free Hospital; J. E. Taylor, Leeds; and C. B. Welsby, London Hospital.

Physiology.—I. M. Bernard, Royal Free Hospital; E. G. Carroll, London Hospital; E. G. P. Faulkner and H. E. B. Finlaison, St. Mary's Hospital; H. A. Hancock, Cambridge; F. I. G. Hunter, Royal Free Hospital; C. de C. W. Langdon, Manchester; A. J. V. Mathews, St. Mary's Hospital; and D. L. Schwabe, Royal Free Hospital.

UNIVERSITY OF GLASGOW.

The following have satisfied the examiners in the Fourth (Final) Professional Examination for M.B., Ch.B.:—

David Anderson, William Anderson, Thomas Archibald, William Barr, Charles Bennett, John Blakely, †John Lindsay Boyd, ‖William Barrie Brownlie, Hector Mackay Calder, **James Carrick, Donald Clark, James Cook (Coalburn), **James Cook (Partick), †John Cruickshank, Margaret Baird Sproul Darroch, Walter Dawson, **Arthur Drummond Downes, M.A., Richard John Driscoll, **William Miller Fairlie, ‖John Fotheringham, B.Sc., George Muir Fraser, M.A., ‖Walter Gilmour, Josiah Stranaghan Harbinson, Stephen John Henry, Benjamin Hutchison, §Alexander Mills Kennedy, Walter Hermann Kiep, John Lang, George Ligertwood, Daniel Conway M'Ardle, §Frank Crombie Macaulay, Robert M'Carlie, Joseph Glaister M'Cutcheon, §John Henry M'Kay, §William M'Kendrick, Francis William Mackichan, §William Campbell Mackie, John James Mackintosh, §James Walter M'Leod, §James M'Millan M'Millan, †John MacMillan, †Peter Russell M'Naught, Donald Irvine M'Naughtan, William Aubrey Layard Marriott, §William Matheson, §Kenneth Chisholm Middlemiss, §Allan Frederick Miller, William Aikman Muir, *Archibald Campbell Munro, Charles Sutherland M'Kay Murison, §Watson Noble, §Albert Rutherford Paterson, *Adam Patrick, M.A., †Ralph Montgomery Fullarton Picken, B.Sc., Murray Purvis, Edward Quigley, Richard Rae, Nicol M'Nicoll Rankin, Jessie Capie Russell, †Neil Campbell Scott, §Alfred Cecil Sharp, James Brown Sim, James Alexander Stenhouse, §William Stevenson, §Hugh Cochrane Storrie, David Taylor, Walter Telfer, John Shedden Thomson, John Morris Walker, §Robert Macnair Walker, §Thomas Charles Dalrymple Watt, Thomas Macknight Watt, David John Williams, §Hugh Mundle Wilson, and Hugh Young.

* Passed with distinction in (*a*) Surgery and Clinical Surgery, (*b*) Practice of Medicine and Clinical Medicine, (*c*) Midwifery. † (*a*) Surgery and Clinical Surgery, (*b*) Practice of Medicine and Clinical Medicine. ‡ (*a*) Surgery and Clinical Surgery, (*b*) Midwifery. § In Surgery and Clinical Surgery. ‖ In Practice of Medicine and Clinical Medicine. ** In Midwifery.

TRINITY COLLEGE, DUBLIN.

At the Final Medical Examination held recently the following candidates were successful:—

Part II.—Albert J. Stals, John L. Phibbs, John A. W. Ponton, Albert V. J. Richardson, Richard P. Hadden, Frank N. Smartt, William A. Nicholson, and Richard D. Fitzgerald.

The following scholarships and prizes have been awarded as the result of recent examinations:—

MEDICAL SCHOLARSHIPS.

In Anatomy and Institutes of Medicine.—Charles M. Finny (Trinity College Scholarship) and David L. M'Cullagh (Stewart Scholarship).

In Physics, Chemistry, Botany, and Zoology.—Georgina Revington (Trinity College Scholarship) and Gerald G. Beckett (Stewart Scholarship).

AWARDS.

Surgical travelling prize and Bennett medal: William Pearson. Special prize and Bennett prize: Thomas O. Graham. Fitzpatrick Scholarship: John L. Phibbs.

FOREIGN UNIVERSITY INTELLIGENCE.

Berlin: Dr. Arthur Pappenheim of Hamburg has been appointed assistant in the Cancer Institute in place of Professor Bergell. Dr. Boruthau has been recognised as *privat-docent* of Physiology and Dr. Rumpel as *privat-docent* of Surgery.—*Bologna:* Dr. Gaetano Fasoli has been recognised as *privat-docent* of Odontology.—*Giessen:* Dr. Siegfried Garten of Leipsic has been appointed to the chair of Physiology in succession to Professor Frank who is going to Munich.—*Münster:* Dr. Többen has been appointed Lecturer in Forensic Psychiatry.—*Naples:* Dr. Gennaro

D'Errico has been recognised as *privat-docent* of Experimental Physiology.—*Rome:* Dr. Filippo Scalzi has been appointed Extraordinary Professor of Diseases of Traumatic Origin.

WEST AFRICAN MEDICAL STAFF.—The summer dinner of the West African Medical Staff took place at the New Gaiety Restaurant on June 22nd. Among those present were Dr. W. T. Prout, C.M.G., late principal medical officer of Sierra Leone, who presided; Mr. W. H. W. Strachan, C.M.G., principal medical officer of Southern Nigeria; Mr. R. Allman, C.M.G., late principal medical officer of Southern Nigeria; Mr. E. A. Chartres, senior medical officer of the Gold Coast; and Mr. R. H. Kennan, senior medical officer of Sierra Leone. Dr. Prout, in proposing "Success and Prosperity to the West African Medical Staff," congratulated the members on the large number present and hoped that they would do their best to get all members of the staff to join the dinner club. He expressed the hope that at no distant date it would be found possible to devise some organisation which would strengthen the hands of the medical staff on the West Coast of Africa and would tend to more rapid sanitary progress than had been the case in the past. Mr. Strachan proposed the health of the visitors and in extending a welcome to them pointed out that such a meeting afforded an opportunity to those who were interested in the welfare of West Africa of showing their sympathy with the sanitary problems which had to be dealt with. Mr. Batty and Dr. Stephens briefly responded. The health of the President, Dr. Prout, was then proposed by Mr. Allman and suitably acknowledged.

THE FOURTH INTERNATIONAL CONGRESS OF ELECTRO-THERAPEUTICS AND RADIOLOGY.—This Congress will be held, under the presidency of Professor J. K. A. Wertheim Salomonson, at Amsterdam from Sept. 1st to 5th. It will deal with every medical application of electricity and radiology, and an exhibition of apparatus and radiographs will be arranged in connexion with it. The meetings will be held at the University. Any person interested in these sciences will be eligible for membership of the Congress, the subscription to which is 12.50 florins (about £1) and for ladies accompanying members 6.50 florins (about 11s.). The business will be conducted in German, English, and French. Details of hotel accommodation and of the entertainment arrangements will be published later. Those who wish to take part in the Congress should communicate with the general secretaries, Dr. J. G. Gohl and Dr. F. S. Meijers, Vondelstraat 53, Amsterdam, inclosing their visiting-cards and their subscriptions. Anyone wishing to contribute a paper is requested to communicate its full title as early as possible and before August 1st. Intending exhibitors of apparatus or radiograms should send at once for the regulations governing the exhibition.

THE NATIONAL SOCIETY FOR THE EMPLOYMENT OF EPILEPTICS: THE CHALFONT COLONY, BUCKS.—The fifteenth annual meeting of the governors of this society was held on July 6th at Denison House, Westminster. The chair was taken by Mr. E. Montefiore Micholls, and the reports of the honorary medical staff and executive committee for the year 1907 were received and adopted. The former report states that the general health of the colonists (of whom there were about 200 throughout the year) was good, and as indicating the excellence of the conditions under which the colonists live it is noted that the average annual mortality at the colony since the opening of the institution in 1894 has been only eight per 1000, or about one-half of the ordinary mortality prevailing amongst the general population of this country. Considering that the inhabitants of the colony are sufferers from so terrible and insidious a malady as epilepsy, this exceptionally low death rate is naturally a source of great satisfaction to those responsible for their care. The report of the executive committee shows that the extensions of the colony which were commenced in previous years have been continued during the period under review, an additional home for women, provided by a generous donation of £3200 given by Mr. Frederick Greene, having been completed, and a home for young girls, the estimated cost of which (for building and furnishing) is £3500 having just been commenced, the entire cost of this building being borne by another generous benefactor, Mr. H. Woolcott Thompson. It appears, however, from the report that there are two other homes very greatly needed—namely, a home for boys and an additional home for men. The colony at present has accommodation for 224 persons, which, however, is obviously insufficient when it is borne in mind that the total number of epileptics in this country is usually estimated as being considerably in excess of 40,000, of whom a very considerable proportion would be suitable cases and would probably derive great benefit from treatment in the society's colony or one of the other homes for these sufferers.

THE ASSOCIATION FOR THE ORAL INSTRUCTION OF THE DEAF AND DUMB.—On July 6th Mr. Leopold de Rothschild presided at the annual meeting of the above association, which was held in the Portman Rooms, Baker-street. In the course of his speech the chairman referred in sympathetic terms to the sudden death of the late director of the association school, Mr. Van Praagh, who was the introducer into England of the oral system of teaching the deaf and dumb, and who so developed the method that it is practically the only one in vogue at the present time. The chairman also stated that there were now 3300 pupils enjoying tuition through the agency of the association. Unfortunately, as is the case with so many deserving charities, sufficient funds are lacking to carry on the work in a thoroughly satisfactory manner. Especially is a gymnasium needed, as it goes without saying that it is of the first importance for those who suffer from physical disabilities which react on the mind to have every opportunity of keeping themselves in good health. During the meeting some instructive demonstrations of the teaching of the system were given by Mr. Haycock, the present director, and by Miss Ferrier, the head-mistress of the school, and by some selected pupils of various ages. There were also on exhibition specimens of dressmaking, fancy work, drawing and painting done by the pupils. The meeting concluded with the distribution of prizes which were presented by Mrs. Mendel, a granddaughter of Mr. Moses, senior member of the committee.

UNIVERSITY OF LIVERPOOL: DEGREE DAY.—A crowded attendance witnessed the annual conferring of degrees in connexion with the University of Liverpool at St. George's Hall on July 11th. Owing to the recent death of the Earl of Derby (the Chancellor of the University) the proceedings were not so elaborate as on previous occasions and the customary hilarity of the students was not so demonstrative. At noon the usual robed procession entered the large hall, headed by the registrar, and consisting of candidates for degrees, diplomas, and certificates, hooded and capped, the members of convocation, the teaching staff, and four gentlemen on whom *ex-officio* degrees were to be conferred, amongst whom was Mr. Damer Harrisson, surgeon to the David Lewis Northern Hospital and principal medical officer of the North-Western Division of the Army Medical Staff (Territorial), upon whom was to be conferred the degree of M.Ch. *ex-officio*. The Vice-Chancellor (Principal A. W. W. Dale) in his address paid a graceful tribute to the excellent qualities of the late Chancellor, dwelling upon the great interest which he had taken in the fortunes of the University. The conferring of the degrees then took place.

LITERARY INTELLIGENCE.—Messrs. Baillière, Tindall, and Cox have among other books in hand for publication in the early autumn "Physiological Principles in Treatment," by Dr. W. Langdon Brown; "Tuberculosis in Infants and Children," to which about 40 medical men throughout the world are collaborating, under the editorship of Dr. T. N. Kelynack; and "The National Physique," by Mr. A. S. Dutton, the result of observations extending over a number of years. Dr. Barnett is writing a work on the "Legal Responsibility of the Drunkard," and Mr. G. E. Clayton a "Compendium of Food Microscopy." Mr. A. F. Tredgold is engaged upon a work on "Mental Deficiency." "Cataract Extraction," by Lieutenant-Colonel H. Herbert, late of the Indian Medical Service; "Operations upon the Uterus, Perineum, and Round Ligaments," by Dr. W. J. Stewart McKay; and "Operative Midwifery," by Dr. J. M. Munro Kerr, are also announced.

THE BRUSSELS MEDICAL GRADUATES' ASSOCIATION.—The annual meeting and banquet of the Brussels Medical Graduates' Association was held at the Garden Club of the Franco-British Exhibition on July 7th, when

22 members and ladies were present. The President, Dr. W. Egmont Kirby, said that the association was in a flourishing condition and he also drew attention to the fact that the council had recently decided to send delegates to Brussels to confer with the President of the University upon matters pertaining to the degree. Dr. James Maughan, ex-president, gave the toast of "The Medical Graduates' Association." Dr. Arthur G. Haydon, honorary secretary, was able to report general progress. He said that members who had left the association had now rejoined, and that he hoped to be able to organise the annual dinner next year on the same lines—i.e., with ladies—when he hoped a larger number of members would attend. The following were elected officers for the ensuing year:—President: Dr. W. Egmont Kirby. Vice-President: Dr. F. H. Edwards. Honorary treasurer: Dr. Major Greenwood. Honorary secretary: Dr. Arthur G. Haydon. Council: Dr. E. Furniss Potter, Dr. A. Douglas Cowburn, Dr. N. Leonard, Dr. R. Paramore, Dr. R. Wilkinson, Dr. E. M. Callender, and Dr. E. O. Fountain. The tables were decorated with the name of the B.M.G. Association in flowers, giving a very pretty effect.

THE POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—The annual meeting of the Poor-law Medical Officers' Association was held at Hull on July 14th, under the presidency of Surgeon-General G. J. H. Evatt, A.M.S. (retired). Dr. Major Greenwood (London), in dealing with the grievances of the service, said that though social conditions were changing, the conditions of the service were practically the same as they were 60 years ago. The Local Government Board had often expressed its willingness to sanction increased salaries and to allow extra fees for anæsthetics and other extra services but that was no use, as it rarely happened that boards of guardians wished to increase the salaries of their officials or to pay extra fees. Foremost amongst the grievances of district medical officers throughout the country was the inadequacy of salaries paid, even when extra fees were allowed; these latter, moreover, amounted to very little. In many instances the sick poor suffered because their medical officers could not afford to provide out of the payments made to them the requisites for the adequate treatment of their patients. With regard to vaccination, the speaker said that never in the course of English history had public authorities shown a more utter disregard of the great trust placed in their hands. Important sanitary legislation had been covertly and openly opposed by the very bodies appointed to carry it out. Although it was true that there had been honourable exceptions, the guardians were accustomed to make use of their public vaccinator to save the rates by paying him a smaller salary as district medical officer. If he held the latter position alone it was robbery of the worst description and the Poor-law patient suffered by their medical officer being expected to attend more or less gratuitously in consideration of being elected to a better paid post. There was little doubt that many Poor-law appointments throughout the country would be resigned to-morrow were it not for the vaccination fees. The badness of such a system required no comment to be condemned by all honest people. He pointed out that the district medical officer of a union who had resigned his office on account of inadequate remuneration had been promptly deprived of his post as public vaccinator. Dr. A. T. Brand (Driffield), the officer referred to, said that his salary worked out at 1½*d.* per visit. No local medical men would apply for the post and one medical man appointed resigned when the British Medical Association called his attention to the facts. Strong resolutions were adopted calling for Government action and arrangements were made to bring the Driffield case before the Local Government Board and for questions to be raised in Parliament on the matter. Speakers also expressed the hope that the result of the Poor-law Commission would be to sweep away the present system of guardians.

PRESENTATION TO A MEDICAL PRACTITIONER.—At Plympton (Devon), on July 7th, Mr. C. H. G. Prance, L.R.C.P. Lond., M.R.C.S. Eng., was presented with a silver tray and tea and coffee service, together with an illuminated address containing the names of 240 subscribers, as a mark of appreciation and esteem on the occasion of his leaving Plympton.

THE WOMEN'S HOLIDAY FUND.—The Women's Holiday Fund, which last summer helped 1035 tired women workers of the poorest class to get one or two weeks' rest in the country or by the sea, has issued an appeal for funds, which is signed by the Bishop of London and others. Contributions will be gratefully acknowledged by Mr. A. S. Daniell, Fairchildes, Warlingham, Surrey, or by Miss Ivimy, secretary, 76, Denison House, Vauxhall Bridge-road, London, S.W.

WEST OF ENGLAND EYE INFIRMARY, EXETER.—The West of England Eye Infirmary was founded at Exeter in 1808 and the committee of the institution, with the object of celebrating that event, has opened a "centenary fund." By this it is hoped to raise £3000 for the purpose of replacing the "present dilapidated and insanitary old building by a new wing." Up to the present about £700 have been received and it is hoped that the whole amount will be obtained before the close of the year.

DONATIONS AND BEQUESTS.—The late Mrs. Jane Churton of Chester bequeathed by will £500 to the Convalescent Home, Parkgate, Chester, £2000 to the Chester Infirmary, and £1000 to the Children's Convalescent Home, West Kirby, Cheshire.—Mr. Archibald John Thomas Francis Aitchison of Bournemouth has by will left £5000 to the East London Hospital for Children.—Mr. Thomas Gibbins of Edgbaston, Birmingham, has bequeathed £1000 to the Birmingham General Hospital and £1000 to the Queen's Hospital, Birmingham.—The late Rev. William Peace of Lansdowne-place, Brighton, has bequeathed £2000 to the Royal Society for the Prevention of Cruelty to Animals; £2000 to the National Society for the Prevention of Cruelty to Children; £750 each to the Royal Hospital for Incurables, Putney Heath, Earlswood Asylum for Idiots, St. Mary's Hospital for Sick Children, Plaistow, Hospital for Consumption and Diseases of the Chest, Fulham-road, London Hospital, Westminster Hospital, Poplar Hospital, King's College Hospital, Royal Free Hospital, Charing Cross Hospital, Middlesex Hospital, and the Great Northern Central Hospital.—At a meeting of the committee of the Cardiff Infirmary held on July 8th it was reported that an anonymous donor had given £1000 to the funds of the institution.—The late Miss L. Ashley of Clifton has bequeathed £1000 to the funds of the Bristol Royal Infirmary.—Queen Charlotte's Hospital has received a donation of £500 from Viscount Portman for the Nurses' Home Building Fund.

THE PUBLIC HEALTH IN EAST AFRICA AND UGANDA.—The official reports of the Administrators of these Protectorates have just been received at the Colonial Office. The former states that the public health in East Africa has, on the whole, been good, though there was a marked increase in the amount of malarial and blackwater fever in the districts near Lake Victoria, corresponding with an unprecedented rise of the lake level. Only one European official died (from blackwater fever) during the year and two were invalided. The total mortality among the white population amounted to 13 (or about 6 per 1000). Sleeping sickness still claims a large number of victims, but the disease seems to be, to some extent, abating in Kavirondo. Plague broke out in Nairobi during the year and 26 deaths resulted out of 31 cases. There was also a slight epidemic at Kisumu. Three cases of enteric fever, of which two terminated fatally, were reported in Nairobi, thus proving the existence of this disease in the country. No authentic case had been known previously. As in former years, the most prevalent diseases were those of the respiratory organs, especially pneumonia and pleurisy, and of the digestive system. The Uganda Protectorate report shows that there was an increase of malaria and blackwater fever in the stations round the Lake shore during the months of May, June, and July. Sleeping sickness and syphilis are the two diseases that chiefly account for the low birth-rate. Both these diseases have been the subject of special medical commissions and proposals have been made, and are in part being carried out, for their abatement. Special attention has been paid to malaria, and there is now no doubt that the measures taken for clearing the foreshore and draining the swamps in the vicinity of Entebbe, Jinja, and Munyonyo are having effect. Epidemics of small-pox, dengue, beri-beri, and measles have occurred in the country during the year.

Plague remains endemic in certain areas of the Protectorate. There was a small but severe outbreak at Mbale in Bukedi. The end of the year was marked by the inauguration of the measure for the complete evacuation by the inhabitants of the fly-infested shores of the Lake, thus removing the main source of infection of sleeping sickness. The mapping out of the distribution of glossina palpalis was practically completed by the Sleeping Sickness Extended Investigation, and its close association with the epidemic of sleeping sickness was confirmed. There has been a progressive diminution in the number of deaths, probably owing to the decrease of the population and removal from fly-haunted areas. The bulk of the interior of the Uganda Protectorate has been found to be fly-free and suitable for the reception of infected Lake-shore people when their removal was found practicable. Clearing the shores about Government stations, landings, &c., has proved to be effective in getting rid of the glossina palpalis locally. A camp was opened in Busiro for local segregation of the sick and for the trial of special treatment by atoxyl. The general condition of the camp and the results from treatment at the close of the year were, generally speaking, hopeful. There has been a gratifying change in the native attitude towards the preventive measures adopted or proposed by the Government. With an increased knowledge of sleeping sickness and of its relation to the fly which carries its cause have come an increased confidence and interest, especially noticeable among the chiefs in Uganda.

UNIVERSITY OF OXFORD APPEAL FUND.—The contributions which have been made for the re-endowment of the University of Oxford have reached a total of more than £100,000, and the second munificent donation of £10,000 promised by Mr. W. W. Astor has now been received by the chairman of the fund, Lord Curzon of Kedleston.

FRIMLEY SANATORIUM.—On July 4th, on the invitation of Lord Cheylesmore, chairman of the committee of management of the Brompton Hospital, a number of visitors inspected the sanatorium at Frimley in connexion with the Brompton Hospital. A characteristic of the sanatorium, which was very fully described in THE LANCET of Jan. 25th, p. 216, is that the patients, both male and female, are systematically employed on such light work as they are capable of performing. The patients, unaided by paid labour, keep the whole of the grounds and gardens in order; and, in addition, since the opening of the sanatorium, they have carried out a number of permanent improvements. Funds for the support of the institution are urgently needed, and judging from the satisfaction of the visitors at what they saw the financial aid should be forthcoming.

LONDON HOSPITAL.—On July 6th the Lord Mayor gave a banquet at the Mansion House in aid of the quinquennial appeal of the London Hospital committee. Lord Rothschild in proposing "Prosperity to the London Hospital," reminded his hearers that the institution opened its doors to people of every religion and of every race. This, of course, is true of every hospital, but geography has decided that the clients of the London Hospital should be specially cosmopolitan. The hospital is deserving of all support.

HOSPITAL FOR SICK CHILDREN.—The new out-patient department which has been presented to the Hospital for Sick Children, Great Ormond-street, by Mr. W. W. Astor in memory of his daughter was opened for public inspection on July 2nd. A notable feature of the new buildings are the inclined slopes which have been substituted for stairs to avoid the danger of falls to children or mothers with babies in their arms. Mr. Astor could honour the memory of his daughter in no more striking manner than by helping to maintain the Great Ormond-street Children's Hospital at a high standard of efficiency.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Irish Universities Bill.

THE Irish Universities Bill has passed through a Standing Committee of the House of Commons and has been reported to the House. At the final sitting of the Committee on Wednesday, July 8th, Mr. BIRRELL announced the names of the Commissioners for the new Universities. For the new University at Belfast there are to be seven Commissioners, and these will include Dr. DONALD MACALISTER, Principal of the University of Glasgow and President of the General Medical Council, and Dr. JOHNSON SYMINGTON, Professor of Anatomy at Queen's College, Belfast. There will be ten Commissioners for the new University having its seat at Dublin, and amongst them are Dr. A. ANDERSON, President of Queen's College, Galway, and Dr. B. C. A. WINDLE, President of Queen's College, Cork.

The Housing and Town Planning Bill.

The Housing, Town Planning, &c., Bill reached a standing committee of the House of Commons on July 14th. The first day's proceedings were concerned with a discussion on the point whether county councils or rural and urban district councils should have the duty of administering Part III. of the Housing of the Working Classes Act, 1890, and the view of the Government that it should devolve on the latter bodies prevailed. In the course of the discussion Mr. BURNS, the President of the Local Government Board, dwelt with satisfaction on the provisions of the Bill which laid down that every county council was to have a medical officer who would devote the whole of his time to public health work. That, he thought, would meet many criticisms on public health administration. The right honourable gentleman further expressed the hope that there would be more coördination in public health in future under the Bill than had existed under the present state of the law. It would be the duty of the clerk and the medical officer of health of a district council to furnish information to the medical officer of health of the county council.

Lunacy in Scotland.

The fiftieth annual report of the General Board of Commissioners in Lunacy for Scotland has just been issued as a blue-book. In this it is stated that on Jan. 1st of the present year, exclusive of insane persons maintained at home by their natural guardians, there were in Scotland 17,908 insane persons of whom the Commissioners had official cognisance. These included the inmates of the training schools for imbecile children and of the criminal lunatic department of Perth prison. Of the insane persons 2,633 were maintained from private sources, 15,226 by parochial rates, and 49 at the expense of the State. As the total number on Jan. 1st, 1907, was 17,593, the increase which took place in the past year was 315.

The Business Arrangements of Parliament.

The Government has arranged its programme of business so as to enable Parliament to adjourn for the autumn holidays on Saturday, August 1st. It is proposed to resume the session on Oct. 12th.

HOUSE OF LORDS.

TUESDAY, JULY 14TH.

Poisons and Pharmacy Bill.

The House went into committee on the Poisons and Pharmacy Bill, the Earl of ONSLOW being in the chair.

On Clause 3,

The Earl of CREWE moved as an amendment to insert a provision to the effect that a body corporate, and in Scotland a firm or partnership, might use the description of chemist and druggist, or of chemist or of druggist, or of dispensing chemist or druggist, if the other requirements of the Bill as to the carrying on of the business were observed, and if one at least of the board of directors or other governing body of the body corporate, or one at least of the members of the firm or partnership, as the case might be, was a duly registered pharmaceutical chemist or chemist and druggist, but nothing in this provision should authorise any body corporate, or in Scotland a firm or partnership, to use the description of pharmacist. Lord Crewe observed that his amendment raised the vexed question of title. However, the amendment had been considered and accepted by the Pharmaceutical Society and also by the large drug companies. It had been thought that by introducing the provision that upon the board there should be a duly qualified and registered chemist the public would be protected from bogus companies.

After some discussion the amendment was agreed to.

Some alterations were made in the schedule.

The Bill as amended was ultimately ordered to be reported to the House

HOUSE OF COMMONS.

THURSDAY, JULY 9TH.

The Medical Examination of School Children.

Mr. STARKEY asked the President of the Board of Education whether he would state what instructions were given to medical officers with regard to the medical examination of children in mixed schools where only one room was available; and whether, owing to the natural objection entertained by parents, especially by those of the older children, he would issue instructions that the boys and girls were not to be examined in the same room at the same time.—Mr. RUNCIMAN replied: I do not think any objection can be raised to certain operations of the medical examination of boys and girls, such as measuring and weighing, being conducted in the same room, but it is obviously necessary that some of the more strictly medical part of the inspection should take place either in separate rooms or at different times. I do not think that any general instructions are needed, but any complaints which are brought to my notice will be inquired into.

Notification of Births Act.

Answering Mr. SHERWELL, Mr. BURNS stated that the Notification of Births Act had been adopted by the councils of 107 boroughs and urban districts, by 16 metropolitan borough councils, and by the common council of the City of London. Amongst the boroughs and urban districts which had adopted the Act were Accrington, Barry, Bath,

Birmingham, Blackburn, Blackpool, Bradford, Burnley, Cambridge, Cardiff, Chesterfield, Croydon, Derby, Dewsbury, Eastbourne, Exeter, Halifax, Kettering, Liverpool, Luton, Maidstone, Middlesbrough, Newcastle-on-Tyne, Newport, Norwich, Nottingham, Oldham, Preston, Sheffield, Shrewsbury, Southampton, Stockport, Stalybridge, Tottenham, Wallsend, West Bromwich, Winchester, Wolverhampton, Worcester, and York. The metropolitan borough councils adopting the Act were Battersea, Bermondsey, Fulham, Finsbury, Hampstead, Holborn, Islington, Kensington, Lambeth, Marylebone, St. Pancras, Paddington, Popiar, Southwark, Westminster, and Woolwich.

The Police Convalescent Home at Brighton.

Mr. COOPER asked the Secretary of State for the Home Department whether it was necessary for a metropolitan police constable to obtain the sanction of a police surgeon to enter the police convalescent home at Brighton as a non-paying patient; whether the inspector in charge of the sub-division had the authority to inform the surgeon that such a recommendation would not be entertained; and, if not, what was the constable's remedy.—Mr. GLADSTONE replied (by written answer): Any constable when on leave may enter the convalescent home at Brighton and remain there at his own expense, but he can only go there as a sick man free of cost to himself on the recommendation of the divisional surgeon, ratified by the chief surgeon. The sub-divisional inspector has not power to grant or withhold sick leave.

Tuberculosis in Ireland.

Mr. DEVLIN asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was now in a position to state whether there had been any appreciable decrease in the number of cases of consumption in Ireland consequent on the inauguration of a national campaign against the disease; and whether he had any statement to make on the subject generally so far as Ireland was concerned.—Mr. BIRRELL furnished the following written answer: I do not think that I can at present conveniently add anything to the answer which I gave to the honourable Member's similar question on May 26th last. I hope, however, to be in a position to make a statement on the subject upon the second reading of the Tuberculosis Prevention (Ireland) Bill.

FRIDAY, JULY 10TH.

Vaccination in the Army.

Sir FRANCIS LOWE asked the Secretary of State for War whether members of the Territorial Forces who might have a conscientious objection to vaccination would be entitled, in case of their desiring to enlist in the Regular Forces, to have their conscientious objection respected.—Mr. HALDANE (by written answer) replied: There is no intention of waiving the regulation regarding vaccination in the Regular Forces in favour of the members of the Territorial Force desirous of enlisting into the Regular Forces.

MONDAY, JULY 13TH.

The Case of Mr. J. Hall-Edwards.

Mr. T. F. RICHARDS asked the Prime Minister whether his attention had been called to the case of Mr. Hall-Edwards, who, although he had lost one hand through his experiments with the x rays for the relief of suffering humanity, had been compelled to abandon his work in order that he might have his other hand amputated; and whether he could see his way clear to recommend a larger sum than the grant of £120 per annum which had been made to him.—Mr. ASQUITH replied: I have received no information to lead me to believe that Mr. Hall-Edwards is in pecuniary need, or that any steps have been taken at the instigation or wish either of himself or of his friends who brought his case to the notice of the late Prime Minister with a view to an increase being made in the pension awarded to him last year, which was considerably above the average amount usually granted from the Civil List. In these circumstances I think it undesirable to express an opinion as to what the decision would be if an application, as suggested in the honourable Member's question, were duly put forward. The total amount of these pensions awardable each year is limited to £1200 and there are many applicants for them with both legitimate and pressing claims.

The Royal Navy Medical Service.

In Committee of Supply on the vote of £258,700 for the navy medical establishments and services,

Mr. JENKINS brought up the subject of the stoppage of the pay of sailors whilst they were in hospital. When they were 30 days in hospital a portion of their pay was deducted. No matter how long the soldier was in hospital he was there free. He asked that the same treatment should be given to sailors.

The CHAIRMAN (Mr. EMMOTT): Order, order. That does not arise on this vote, which merely deals with the expenses of the medical establishment.

Mr. MCKENNA (the First Lord of the Admiralty): May I, however, say that the Board of Admiralty is inquiring into this matter.

Mr. HAY asked what the Board of Admiralty had done during the past year to improve the Royal Navy Medical Service and also the hospital service. It was within the knowledge of the House that much was to be desired with regard to these services. Had any steps been taken to improve the position and pay of medical and hospital staffs?

Mr. MCKENNA said that the honourable Member had gone over a very wide field, but he had made no specific complaint. The Board of Admiralty was always endeavouring to improve the hospital service. However, there had been no special work done except with regard to Malta fever. Considerable efforts were made to discover the cause of this fever, and it had been found that it was disseminated by goats.

Major ARETHUSER-GRAY: But was not that discovered the year before last?

Mr. MCKENNA said that this state of things had at least been verified during the past year and steps had been taken to eliminate the fever.

Mr. HAY further asked whether there had been any increase in the staff of medical officers during the last 12 months or in the number of nurses. Had there been any increase of the comforts to sailors suffering from diseases in naval hospitals? Had there been any special attempt to deal with the particular diseases which sailors were liable to contract on foreign service?

No reply was given.

The vote was carried by 167 votes to 5.

TUESDAY, JULY 14TH.

The New Buildings for the Royal Army Medical Corps at Woolwich.

Lord BALCARRES asked the Secretary of State for War what was the area of ground which it was proposed to inclose for the purpose of the new buildings for the Royal Army Medical Corps at Woolwich, and what was the estimated outlay.—Mr. HALDANE furnished the following written reply: The area is about two acres and the estimated outlay £12,500.

Post Office Servants in Ireland and Tuberculosis.

Mr. DEVLIN asked the Postmaster-General whether he could state the number of Post Office employees in Ireland who had gone on sick leave during the present year suffering from tuberculosis; whether he was aware that Dr. H. Fitzgibbon, the medical officer to the department, had recently stated in Dublin that the Post Office officials work under conditions which favoured the development of tuberculosis; whether any steps would be taken to afford these officials better conditions of work, especially in regard to space, ventilation, and shorter hours, so as to mitigate the tendency to contract or to develop this disease; and whether he would consider the practicability of the Government making a contribution towards the establishment of a sanatorium for members of the postal service in Ireland who had contracted this disease.—Mr. BUXTON (by written answer) replied: I have not yet obtained the figures asked for, but will send them to the honourable Member as soon as possible. Dr. Fitzgibbon informs me that, in the remarks to which the honourable Member evidently refers, he spoke of the early morning hours of attendance which are inseparable from Post Office work as favourable to the development of tuberculosis when taken in conjunction with the defective ventilation of the homes of many of the Post Office staff in Dublin. He did not imply that tuberculosis was more prevalent among that staff than among the general public in Dublin but asserted the exact opposite. Schemes for making sanatoriums available for members of the postal service in Ireland have been brought before me and if a practicable scheme is arranged by all those concerned I shall be glad to facilitate its execution in the same way as a similar scheme in this country has been assisted. I do not think, however, that I should be justified in proposing a grant from public funds.

WEDNESDAY, JULY 15TH.

The Deaths from Plague.

Mr. WILLIAM REDMOND asked the Under Secretary of State for India whether he could state the number of people who had died from plague in India during the last year; and what steps had been taken to deal with this scourge.—Mr. BUCHANAN replied: In the year ending Dec. 31st last the number of deaths from plague was 1,204,194. If the 12 months ending June 30th, 1908, be taken the number was 252,781, showing a very satisfactory decrease. Some account of the measures now adopted in combating plague is given in the return recently presented on the moral and material progress of India for the year 1906-07. They include the destruction of rats, the evacuation of infected quarters, the improvement of insanitary areas, and inoculation. Grants aggregating £200,000 a year have been made to local governments in this year's Budget for expenditure on sanitary improvements with special reference to the prevention of plague.

Mr. REES also asked whether the mortality from plague in India, for the period during which the epidemic had prevailed, worked out to an average of about 2·135 per 1000 of the population; whether the mortality from tuberculosis in the United Kingdom last reported was about 1·6 per 1000 of the population; whether, having regard to the general rates of mortality prevailing amongst Eastern populations, the death-rate from plague in India implied any greater failure to stay its ravages on the part of the Government of India than might be established against the administrators of this country for the high death-rate resulting from tuberculosis; and whether he would take steps to make known the efforts made in India to diminish the death-rate from plague.—Mr. BUCHANAN answered: The first figure given by the honourable Member is approximately correct, but the averages quoted by the honourable Member cannot, in the Secretary of State's opinion, be compared in the manner suggested. The steps taken to combat plague have already been made generally known through the Moral and Material Progress Report and by other published statements.

BOOKS, ETC., RECEIVED.

FROWDE, HENRY, AND HODDER AND STOUGHTON, 20, Warwick-square, London, E.C.

Oxford Medical Publications. Selections from the Writings, Medical and Neurological, of Sir William Broadbent, Bart., K.C.V.O., Commander of the Legion of Honour, M.D., F.R.C.P., F.R.S., D.Sc. Leeds, LL.D. Edinburgh, St. Andrews, and Toronto, late Physician in Ordinary to H.M. the King and to H.R.H. the Prince of Wales, and Physician Extraordinary to H.M. Queen Victoria. Edited by Walter Broadbent, M.D., M.R.C.P. Price 15s. net.

HEINEMANN, WILLIAM, 21, Bedford-street, London, W.C.

The Natural History of Cancer. With Special Reference to its Causation and Prevention. By W. Roger Williams, Fellow of the Royal College of Surgeons. Price not stated.

HIRSCHWALD, AUGUST, Unter den Linden, 68, Berlin, N.W.

Zeittafeln zur Geschichte der Medizin. Von Prof. Dr. J. L. Pagel. Price M.3.

LONGMANS, GREEN, AND CO., 39, Paternoster-row, London, E.C., and New York, Bombay, and Calcutta.

Ball Games and Breathing Exercises. By Alice R. James, Author of "Girls' Physical Training" and "Health Rules." With Preface by Harry Campbell, M.D., B.S. (London), F.R.C.P. Price 1s. 6d.

MALOINE, A., 25-27, Rue de l'École de Médecine, Paris.

Les Ligatures d'Artères à l'Amphithéatre. (Précis Iconographique.) Par MM. le Dr. E. Mériel, Professeur Agrégé à la Faculté de Médecine de Toulouse, Chirurgien des Hôpitaux, Chef des Travaux de Médecine Opératoire, et le Dr. R. Rougean, Ancien Chef de Clinique à la Faculté de Médecine de Toulouse, Médecin des Asiles. Price not stated.

MARHOLD, CARL, Verlagsbuchhandlung, Halle a.S.

Sammlung zwangloser Abhandlungen aus dem Gebiete der Verdauungs- und Stoffwechsel-Krankheiten. Herausgegeben von Prof. Dr. A. Albu in Berlin. I. Band. Heft 3. Uber abdominale

Schmerzanfälle. Von Prof. Dr. L. Kuttner in Berlin. Price M.1.50. Indikationen und Technik der Entfettungskuren. Von Professor Dr. Paul Friedrich Richter in Berlin. Price M.1.

Über Behandlung von Augenverletzungen. Von Prof. Dr. O. Lange, Augenarzt am Herzoglichen Krankenhause in Braunschweig. Price Pfg.75.

Uber den Frühjahrskatarrh. Von Friedrich Feldmann, Giessen. Price Pfg.80.

Eine neue Kreislauf-Theorie und ihre Beziehung zur Pathologie und Therapie. Von Dr. Ernst Homberger, Frankfurt a.M. Price M.1.20.

Der Wert der Rekto-Romanoskopie für die Erkennung und Behandlung der tiefsitzenden Darmerkrankungen. Von Prof. Dr. Julius Schreiber, Königsberg i.Pr. Price M.3.

MURRAY, JOHN, 50A, Albemarle-street, London, W.

Climate, considered Especially in Relation to Man. By Robert De Courcy Ward, Assistant Professor of Climatology in Harvard University. Price 6s. net.

The Solar System. A Study of Recent Observations. By Charles Lane Poor, Professor of Astronomy in Columbia University. Price 6s. net.

RUDEVAL, F. R. de, 4, Rue Antoine-Dubois, Paris (VIe).

Thérapeutique Hydro-Minérale des Maladies Vénériennes. Indications des Cures Thermales. Par le Dr. Henri Pelon, Ancien Chef de Clinique Médicale à l'Université de Montpellier, Membre Correspondant National des Sociétés de Thérapeutique et Hydrologie Médicale de Paris, Médecin des Eaux de Luchon. Price Fr.5.

SAMPSON LOW, MARSTON, AND CO., LIMITED, London.

Wax Craft. All about Beeswax, its History, Production, Adulteration, and Commercial Value. By T. W. Cowan, F.L.S., F.G.S., F.R.M.S., F.E.S., &c., Chairman, British Bee-keepers' Association; Editor, *British Bee Journal*. Price 2s. net.

SANITARY PUBLISHING COMPANY, LIMITED, 5, Fetter-lane, London, E.C.

Cast-iron House Drainage, with Especial Reference to the Drainage of Town Houses. By Gerard J. G. Jensen, C.E., Author of "Modern Drainage Inspection and Sanitary Surveys," &c. Price 4s. 6d. net.

SCIENTIFIC PRESS, LIMITED, 28 and 29, Southampton-street, Strand, London, W.C.

The Heart and Sudden Death. By Theodore Fisher, M.D., F.R.C.P., Assistant Physician to the East London Hospital for Children, formerly Hon. Pathologist to the Bristol Royal Infirmary, &c. Price 2s. net.

THACKER, SPINK, AND CO., Calcutta. (THACKER, W., AND CO., 2, Creed-lane, London, E.C.

Handbook for Wives and Mothers in India. By Mildred E. Staley, M.B., L.M., Physician in Charge, Lady Aitchison Hospital for Women, Lahore. Price 4s. 6d. net.

UNIVERSITY OF LONDON, South Kensington, London, S.W.

The Libraries of London: A Guide for Students. Prepared on the Instruction of the Senate of the University of London. By Reginald Arthur Rye, Goldsmith's Librarian, University of London. Price 6d. net; post free, 9d.

URBAN UND SCHWARZENBERG, Berlin und Wien.

Lehrbuch Klinischer Untersuchungsmethoden für Studierende und Aerzte. Von Dr. Theodor Brugsch, Assistent der II. Mediz. Universitäts-Klinik in Berlin, und Dr. Alfred Schittenhelm, a.o. Professor der Inneren Medizin in Erlangen. Mit einem Beitrag: Klinische Bakteriologie, Protozoologie und Immuno-Diagnostik, von Dr. J. Citron, Berlin. Price M.20.

Die Physiologie der Verdauung und Ernährung. 23 Vorlesungen für Studierende und Aerzte. Von Dr. Otto Cohnheim, a.o. Professor der Physiologie an der Universität Heidelberg. Price M.15.

YEAR BOOK PUBLISHERS, 40, Dearborn-street, Chicago. (G. GILLIES AND CO., 28, Gibson-street, Hillhead, Glasgow.)

The Practical Medicine Series. Series 1908. Under the General Editorial Charge of Gustavus P. Head, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Volume I.: General Medicine. Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, A.M., M.D. Price not stated. Volume II.: General Surgery. Edited by John B. Murphy, A.M., M.D., LL.D., Professor of Surgery in Rush Medical College (in Affiliation with the University of Chicago). Price 8s. net. Volume III.: The Eye, Ear, Nose, and Throat. Edited by Casey A. Wood, C.M., M.D., D.C.L., Albert H. Andrews, M.D., and Gustavus P. Head, M.D. Price not stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BEAUMONT, A. R., M.R.C.S., L.R.C.P., has been appointed Resident Assistant Anæsthetist at St. Mary's Hospital.

BROWN, W. LANGDON, M.D. Cantab., F.R.C.P. Lond., has been appointed Physician to the Royal General Dispensary.

ENGLISH, T. CRISP, M.B., B.S. Lond., F.R.C.S., has been appointed Surgeon to the Hospital of St. John and St. Elizabeth, N.W.

FLEMING, ALEXANDER, M.B., B.S., has been appointed Resident Casualty House Surgeon at St. Mary's Hospital.

GAYTON, F. C., M.D. Aberd., M.R.C.S., has been appointed Medical Superintendent at the Surrey County Asylum.

GREEN, A., M.B. Lond., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Chesterfield District of the county of Derby.

GRIFFIN, W. R., M.D. Dub., has been appointed Medical Officer to the Marytavy District by the Tavistock (Devon) Board of Guardians.

HAMILTON, LOUISA, M.D. Lond., has been appointed Clinical Assistant to St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.

KNUTHSEN, LOUIS FRANCIS, M.D. Edin., has been appointed Assistant Physician to St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.

LEES, H. C., M.B., B.S. Lond., has been appointed Honorary Assistant Surgeon to the Blackburn Infirmary.

MURPHY, J. KEOGH, M.D., M.C. Cantab., F.R.C.S. Eng., has been appointed Surgeon to the Miller General Hospital for South-East London.

SHORLAND, E. TREVOR, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health by the Westbury (Wilts) Urban Council, and Medical Officer of Health by the Westbury (Wilts) Rural District Council.

STEVENS, THOMAS G., M.D., B.S. Lond., has been appointed a Physician to Out-Patients at Queen Charlotte's Lying-in Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—House Physician; also House Surgeon, each for six months. Salaries at rate of £20 per annum, with board and lodging.

BIRMINGHAM, CITY OF, SALTERLEY GRANGE SANATORIUM FOR CONSUMPTIVES, near Cheltenham.—Medical Superintendent. Salary £250 per annum, with board.

BIRMINGHAM INFIRMARY.—Assistant Resident Medical Officer. Salary £104 per annum, with apartments, rations, &c.

BIRMINGHAM, QUEEN'S HOSPITAL.—House Physician. Salary at rate of £50 per annum, with board, lodging, and washing.

BOLINGBROKE HOSPITAL, Wandsworth Common.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, lodging, and washing.

BOURNEMOUTH, ROYAL BOSCOMBE AND WEST HANTS HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon for six months. Salary £80, with board, lodging, and washing.

BRISTOL ROYAL INFIRMARY.—Two Honorary Physicians and One Honorary Assistant Physician.

BURNLEY, VICTORIA HOSPITAL.—Resident Medical Officer. Salary £100 per annum, with residence, board, and washing.

CANCER HOSPITAL, Fulham-road, London, S.W.—House Surgeon for six months. Salary £70 per annum, with board and residence.

CARDIFF INFIRMARY (GENERAL HOSPITAL).—House Surgeon for six months. Salary £30 with board, residence, and laundry.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Junior House Surgeon. Salary £60 per annum, with board, apartments, and laundry.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Clinical Assistant. Also House Physician for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

CITY OF LONDON UNION INFIRMARY.—Assistant Medical Superintendent. Salary £150 per annum, with apartments, rations, and washing.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Physician. Salary £80 per annum, with board, residence, and washing.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £60 per annum, with board, residence, and washing.

DERBYSHIRE, DEVONSHIRE HOSPITAL, Buxton.—Assistant House Surgeon. Salary £70 per annum, with apartments, board, and laundry.

DEVONPORT, ROYAL ALBERT HOSPITAL AND EYE INFIRMARY.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

DORCHESTER, DORSET COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £140 per annum, with board, &c.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.—House Surgeon for nine months. Salary at rate of £60 per annum, with board, residence, and washing. Also Anæsthetist. Salary at rate of 25 guineas per annum.

GENERAL LYING-IN HOSPITAL, York-road, Lambeth, S.E.—Resident Medical Officer for four months. Salary at rate of £50 per annum, with board and lodging.

GREAT NORTHERN CENTRAL HOSPITAL.—Physician.

HAMPSTEAD GENERAL HOSPITAL.—Gynæcologists, Surgeon to the Throat and Ear Department, and Physician to the Skin Department.

HEREFORDSHIRE COUNTY COUNCIL.—Medical Officer of Health. Salary £500 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Resident Medical Officer. Salary £100 per annum, with board and residence. Also Resident House Physician for six months. Salary £25.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Physician, House Surgeon, and Assistant Casualty Officer.

KETTERING AND DISTRICT GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, residence, &c.

LANCASTER, ROYAL LANCASTER INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with residence, board, attendance, and washing.

LEEDS HOSPITAL FOR WOMEN AND CHILDREN.—House Surgeon for six months. Salary at rate of £50 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Two Resident Medical Officers. Salary £100 per annum, with board and lodging.

LEEDS, UNIVERSITY OF, FACULTY OF MEDICINE.—Demonstrator of Physiology. Salary £150 per annum.

LEICESTER INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, apartments, and washing. Also Assistant House Physician. Salary at rate of £50 per annum, with board, apartments, and washing.

LEICESTERSHIRE AND RUTLAND LUNATIC ASYLUM.—Junior Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

LIVERPOOL ROYAL INFIRMARY.—Honorary Surgeon.

LONDON COUNTY ASYLUM, Claybury, Woodford, Essex.—Junior Assistant Medical Officer, unmarried. Salary £160 per annum, with board, apartments, and washing.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—House Surgeon, non-resident, for six months. Salary at rate of £50 per annum. Also Anæsthetist.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY. Resident House Surgeon. Salary £100 per annum, with rooms, attendance, board, and washing.

MANCHESTER, UNIVERSITY OF.—Senior Demonstrator in Physiology. Salary £150, rising to £200 per annum.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—House Surgeon for six months. Salary at rate of £80 per annum.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Junior Resident Medical Officer. Salary £50 per annum, with board, lodging, &c.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160 per annum.

NEWCASTLE-UPON-TYNE EDUCATION COMMITTEE.—Assistant Medical Officer. Salary £200 per annum.

NEWCASTLE-UPON-TYNE WORKHOUSE.—Assistant Medical Officer. Salary at rate of £150 per annum, with apartments, rations, and washing.

NORTHUMBERLAND, NEWCASTLE-UPON-TYNE AND NORTHUMBERLAND SANATORIUM, Barrasford.—Honorary Visiting Physician.

OLDHAM COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary £200, rising to £260 per annum.

PERTH ROYAL INFIRMARY.—House Surgeon. Salary £60 per annum, with board.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at rate of £60 per annum, with board, lodging, and washing.

ST. PANCRAS AND NORTHERN DISPENSARY, 126, Euston-road.—Resident Medical Officer. Salary £105 per annum, with residence and attendance.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with residence, board, and allowance for laundress.

SHEFFIELD, EAST-END BRANCH OF THE CHILDREN'S HOSPITAL.—House Surgeon. Salary £70 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician. Salary £50 per annum, with board, lodging, and washing.

SOUTH AFRICA, PROVINCIAL HOSPITAL, Port Elizabeth.—Assistant House Surgeon. Salary £225, rising to £300 per annum, with board and residence.

WEST HARTLEPOOL COUNTY BOROUGH.—Medical Officer of Health. Salary £500 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

WORCESTER COUNTY AND CITY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £140 per annum, with board, lodging, attendance, and laundry.

WORCESTERSHIRE, BARNSLEY HALL ASYLUM, Bromsgrove.—Second Assistant Medical Officer. Salary £150 per annum, with quarters, board, washing, and attendance.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Act at Chard in the county of Somerset.

Births, Marriages, and Deaths.

BIRTHS.

INMAN.—On July 8th, at The Lower Mill House, Bedhampton, Hants, the wife of William S. Inman, M.B., of a son.

PARKHURST.—On July 9th, at "Rathan," Newhaven, the wife of Rodie Parkhurst, M.B., C.M., of a daughter.

MARRIAGES.

ARMSTRONG-DASH—BOX.—On July 11th, at St. Mary's Church, Ealing, Charles James Armstrong-Dash, M.B., B.S. Lond., to Emily Mildred, younger daughter of Joseph Box, of Avenue Lodge, Ealing.

FRENCH—FORD.—On July 9th, at St. John's, Bexley, Ronald Edgar French, M.A., M.B., B.S., to Dorothy Brodie, third daughter of Edward Ford, Esq., Barrister-at-law.

GAUNT—PUMPHREY.—On July 9th, at St. Pancras Church, W.C., John Penn Gaunt, M.R.C.S., of Alvechurch, Worcestershire, to Alice Gertrude Pumphrey, formerly of Ilkley.

SLADE—FRANKS.—On July 11th, at St. Jude's Church, Courtfield-gardens, by the Rev. Prebendary Eardley Wilmot, Vicar, John Godfrey Slade, M.D., second son of the late G. P. Slade, of New South Wales, and Mrs. Slade, of 38, Holland-park, to Mary, youngest daughter of the late Lieutenant-Colonel Whitmore Franks, Royal Sussex Regiment, and Mrs. Franks, of 58, Courtfield-gardens.

DEATHS.

FLOYER.—On July 12th, at Cotswold House, Egham, Surrey, Charles Anthony Floyer, M.D., aged 84 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

HOW DISEASED MEAT REACHES THE TOWNS.

AN annotation in these columns on July 11th on the subject of unwholesome meat in rural districts called attention to a prosecution by the Cuckfield rural council. Another Sussex prosecution presenting points of interest to medical men and the public has now taken place at Brighton, the defendants being Arnold John Middleton, farmer, and Lawrence Neary, butcher, both of Ditchling. Both defendants were fined £3 and costs on July 13th for exposing for sale portions of an ewe which were unsound and unfit for the food of man, but in view of the fact that Neary was fined £2 10s. for being in possession of unsound meat at Brighton only a month previously at the same court (see THE LANCET, June 13th, p. 1735) a much more substantial fine might have been expected. The meat on this occasion, as on the former, had been dressed by blowing air into the cellular tissues so as to hide the emaciation and to make it appear plump and spraying of hot fat giving it the appearance of lamb. But no wonder people can be found ready to trade with such meat when they can openly go to a public market in a rural district and buy sheep which they must know will not be fit for human consumption. Middleton bought this particular ewe at Hassocks market for one shilling! Neary's son slaughtered it, and, after the blowing and spraying processes had been completed, the carcass of this animal, which during life had suffered from parasitic disease, found its way to Brighton where it was to be sold as lamb! It would seem that the fault lay in the first instance with the original owner of the animal who must have known its condition; in the second instance with the sanitary authorities for allowing the sale of such a animal; and in the third place with the auctioneers at the market. The auctioneers' clerk was called to give evidence. He admitted the sale by auction of the ewe for one shilling, and, in cross-examination said the stock brought to the market was examined. "Do you sell with a warranty?" the clerk was asked. "We warrant that it's alive and there, that's all," was the reply. Answering further questions, the clerk said the auctioneers had nothing to do with the examination of the animals sold in the market; an inspector was appointed by the County Council for that purpose. However, the case certainly seems to suggest the great importance of more vigilance being shown by the authorities concerned over cattle sold by auction at the public markets.

THE DEATH OF NELSON.

To the Editor of THE LANCET.

SIR,—It may interest your readers to hear a contemporary account of the procedure in the cockpit of the *Victory* when Lord Nelson was wounded, the contrast with present practice being so marked.

> ..... Mr. Beatty now approached to examine the wound. His Lordship was raised up; and Beatty [the doctor], whose attention was anxiously fixed upon the eyes of his patient, as an indication the most certain when a wound is mortal, after a few moments glanced his eye on Bourke [the purser], and expressed his opinion in his countenance. ..... Beatty now said, "Suffer me, my Lord, to probe the wound with my finger; I will give you no pain." Lord Nelson permitted him, and passing his left hand round his waist, he probed it with the forefinger of his right.—*Naval Chronicle*, vol. xv., 1806, p. 36.

I am, Sir, yours faithfully,

July 6th, 1908. STUDENT.

SILLY SENSATIONALISM.

THE death a few weeks ago from hydrophobia of a business man in Brooklyn, U.S.A., was the origin of an outburst of lurid paragraphs in the lay press on this side of the Atlantic. The victim, in some quarters called a multi-millionaire, was alleged, after a bite from a favourite dog, to have fallen into convulsions upon hearing the water running in his taps and so to have acquired the conviction that he had hydrophobia. He was then stated to have presented himself at the New York Pasteur Institute and to have been told that he was suffering from hydrophobia, and that his application for treatment was made too late. So he returned home, made his will, and, seeing his terror, accommodating medical men proceeded to poison him with opiates—an action into the ethics of which we were assured the Medico-Legal Society of New York proposed to inquire. On this amazing story it would have been odd if amazing comments had not been made. The "brutality" of the medical men at the Pasteur Institute in cruelly condemning a multi-millionaire to death, and the immorality of the medical men acquiescing in the murder of a multi-millionaire made excellent themes, and some worthy penmen let themselves go—indeed, a little paper called the *Zoophilist* is still extracting capital from the story. But the episodes are all untrue. The victim was not a multi-millionaire, though his death does not lose in sadness thereby as far as we can see; he was not condemned to death by the Pasteur Institute, nor was the word hydrophobia mentioned in his presence at that institute; he was seen at his home, in consultation with his medical man, by Dr. W. L. Wheeler, the resident physician of the Pasteur Institute, and was

not suffering from panic nor was he excessively drugged. He died in the typical manner from constant convulsions and the post-mortem examination showed the cause of death to have been hydrophobia. Who makes up these stories? The touch about the running of water from the taps causing convulsions was a master stroke. It could only take in very ignorant people, but there are a good many sufficiently ignorant people to make it quite an acceptable occurrence.

THE CHILDREN'S EYES.

THE public health department of the Metropolitan Borough of St. Marylebone has issued a card of instructions concerning the care of children's eyes which ought to be of considerable public use. After pointing out that inflammation in the eyes of the newly born child is a very dangerous and infectious illness which, if prompt measures are not taken, may entirely destroy the sight, the following rules are laid down:—

1. When a child is born it is wise to thoroughly wash out its eyes with water. The baby's eyes should be examined daily for a week after birth, and if there is the slightest discharge send for the doctor at once.

2. Remember that this disease is very catching if the discharge should get into the eye of another person.

3. *In every case of injury to the eye, however slight, get a doctor's advice* AT ONCE, and do not trust such a serious matter to a chemist, who, through ignorance, may use measures which might result in permanent blindness.

4. If you are nursing your child through measles, scarlet fever, &c., be very careful to follow your doctor's instructions even after your child is better, as the sight may be greatly injured in this kind of illness.

5. Never allow your children to read, write, or sew in a bad light, or they may permanently damage their eyesight.

6. Never allow your child to wear glasses until the *doctor* has examined the eyes, and ordered them. You are warned against the advertisements of so-called "eye specialists," chemists posing as "opticians," "sight testers," and the like.

7. If you notice that your child has to bend closely over books or work, or screws up his eyes when looking at things at a distance, or holds his head crookedly under the same circumstances, or suffers from pains in the head, there is probably something wrong with the eyes, and he should be promptly taken to a doctor or to the eye hospital for treatment. All children over a year old who squint should be taken to the doctor or the eye hospital at once.

This is the right sort of information to disseminate and the right way to disseminate it.

"NO MORE DOCTRINE."

IN view of the adoption by the Devon county council of the medical inspection of school children several indignant mothers have written to the head-mistress of one of the schools claiming exemption from the operation of the Act. Perhaps the most emphatic protest is enshrined in the following epistolary masterpiece: "Dear Madam, I objects to my child being overorled by a doctor. I clears his blood vessels reglar with brimstone and treacle, and he don't want no more doctrine."

THE CHEAP REVOLVER AGAIN.

THREE deaths traceable to the ease with which revolvers can be purchased were inquired into recently at Croydon. The evidence showed that one of the deceased had some years before received an injury to his head and more recently had suffered from influenza. His family was in comfortable circumstances and he had between £20 and £30 in the savings bank, but he was out of work and depressed. A gun licence found in his room showed that he had complied with the necessary formality to be complied with in buying a revolver, and in the house in which his dead body had been found there had also been discovered the bodies of his mother and sister, as well as those of two dogs, all shot by him before committing suicide himself. The jury found that the two women were wilfully murdered by the man and that he committed suicide while mentally deranged. Frequent reference has been made in THE LANCET to the ease with which the revolver is purchased and to the temptation which it offers to criminally minded or weakminded persons. Of its unlawful use there are abundant records every year, but it would be difficult to adduce evidence of its being lawfully employed as a weapon of self-defence in an appreciable number of cases.

THE COWPER MUSEUM.

THE Cowper and Newton Museum at Olney, Bucks, was established some eight years ago in the house where Cowper lived at Olney. In that house Mr. W. H. Collingridge, the father of the medical officer of health of the City of London, was born, and in 1900, the centenary of the death of the poet, the late Mr. W. H. Collingridge presented the building to his native town in trust for the nation. Since that time it has been the resort of many pilgrims, for Cowper's fame has increased since his death, especially in America. The institution has an income of only £18 a year, which is quite insufficient for the adequate maintenance of the museum, and an appeal for £2200 with which to endow it has been issued by the trustees and signed by the Bishop of Durham. Mr. John Collingridge, of the *City Press*, also a son of the donor, has sent us a pamphlet illustrated with portraits of the Rev. John Newton and William Cowper, the latter from the original by Romney and drawn by W. Harvey, describing the museum and its interesting contents. Two miniature reproductions of Randolph Caldecott's illustrations of "The Diverting History of John Gilpin" are also included, illustrating the lines—

> "Away went Gilpin, neck or nought;
> Away went hat and wig."

And—

> "So why bareheaded you are come,
> Or why you come at all?"

The front page shows an illustration of the museum from a photograph. Cowper's place in literature will always be rather a disputed point, but his verse is at any rate very direct in its appeal. For example:—

> "Now stir the fire, and close the shutters fast,
> Let fall the curtains, wheel the sofa round,
> And while the bubbling and loud hissing urn
> Throws up a steamy column, and the cups
> That cheer but not inebriate, wait on each,
> So let us welcome peaceful evening in."

This is not exactly poetry, nor is the scene drawn calculated to enthuse the reader with a love of strenuous ideals, but no one can always be struggling and aspiring, and in many moods Cowper's picture is a very alluring one. The Christian Church, too, owes to the poet a deep debt of gratitude for his hymns. We hope that the comparatively small sum of money asked for by the trustees of the Cowper Museum will be at once forthcoming.

Alchemist.—It is a secret remedy. The composition is not published, and the results claimed have not been substantiated. We shall be happy to analyse a specimen if our correspondent will forward one. There is no reason why the composition should be constant.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. H. G. Adamson: Clinique (Skin).
TUESDAY.—4 P.M., Dr. A. Morison: Clinique (Medical)
WEDNESDAY.—4 P.M., Mr. J. Pardoe: Clinique (Surgical).
THURSDAY.—4 P.M., Mr. Hutchinson: Clinique (Surgical).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, road, W.

MONDAY.—12 noon, Lecture:—Dr. Low: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Dr. Saunders: Clinical (with cases).

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Skin Diseases. 5 P.M., Lecture: Dr. Pritchard: On Abdominal Pain.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Scott: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women. 3 P.M., Lecture:—Dr. R. H. Cole: Clinical Varieties of Insanity (at the London County Asylum, Hanwell).

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Skin Diseases. 5 P.M., Lecture:—Dr. S. Taylor: A Severe Cold.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Scott: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), West London (2.30 P.M.).

TUESDAY (21st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-

square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (22nd).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.).

THURSDAY (23rd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.).

FRIDAY (24th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

SATURDAY (25th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1908, which was completed with the issue of June 27th, and the Title-page to the Volume, were given in THE LANCET of July 4th.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1908 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 16th, 1908.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks
July 10	29·81	S.W.	0·21	97	68	55	62	64	Raining
,, 11	29·75	S.W.	0·06	110	72	60	61	64	Cloudy
,, 12	29·67	S.W.	...	91	68	58	61	63	Overcast
,, 13	29·55	W.	0·67	77	61	57	58	58	Raining
,, 14	29·77	W.	0·31	123	67	54	57	60	Cloudy
,, 15	29·91	W.	0·04	126	71	55	57	61	Cloudy
,, 16	29·89	W.	0·08	89	66	57	61	63	Cloudy

During the week marked copies of the following newspapers have been received:—*Edinburgh Evening Dispatch, Yorkshire Post, Hanley Sentinel, Sheffield Telegraph, York Herald, Liverpool Courier, Manchester Evening News, Birmingham Mail, Huddersfield Examiner, Birmingham Post, Manchester Guardian, Manchester Evening Chronicle, The Sketch, Morning Post, Newcastle Journal, Westminster Gazette, The Queen, Black and White, Aberdeen Gazette, Scotsman, Glasgow Citizen, Bristol Evening News, Coventry Telegraph, Bradford Observer, Cardiff News, Dundee Advertiser, Middlesbrough Gazette, &c.*

Communications, Letters, &c., have been received from—

A.—Monsieur J. Astier, Asnières; Mrs. A. Anderson, Twickenham; Mr. T. Aubert, Kristiania; Dr. Andrieu, Berck-sur-Mer; Dr. A. P. Allan, South Croydon; Mr. W. Innes Addison, Glasgow; Apothecaries, Society of, Lond., Secretary of; Mr. P. Anderson, Bradford.

B.—Dr. W. E. Barton, Lond.; Messrs. G. Barth and Co., Lond.; Dr. S. Bree, Manningtree; Mr. R. W. Brimacombe, Lond.; *British Journal of Tuberculosis*, Lond.; Mr. R. H. Bootay, Bray; British Medical Association, Leinster Branch, Secretary of; Birmingham, City of, Medical Officer of Health of; Mr. J. R. de C. Boscawen, Truro; Messrs. Brown and Pank, Lond.

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I.—*Indian Medical Record*, Calcutta, Manager of.

J.—Messrs. Jones and Co., Paris; Mr. L. W. H. Jones, Brecon; Mr. T. M. Jones, Lond.

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